SAS SPECTRUM eNEWS

SAS at SciX

SAS Wants to Promote You!

Are you organizing a session at SciX? Presenting a short course? Presenting a paper?

SAS would like to highlight member activities at the SAS Annual Meeting during SciX 2016. Please send us information on your event including:

- Session
- Class
- Paper
- Date and Time
- Title
- Link to the SciX online program.

We will be putting this information on the website to highlight our activities at this conference.

Send your responses to sasadmin@s-a-s.org.

SAS Student Members-Only Event

Come and enjoy the fun, food, drinks, networking and trivia event at the SAS Student Members-Only Event during SciX 2016 in Minneapolis.

When: Monday, September 19th 8:00–11:00 PM

Where: O'Donovan's Pub
700 North 1st Avenue, Minneapolis, MN 55403

For directions, use this link: https://goo.gl/cx8D38 or call (301) 674-1458 for questions.

No need to reserve your place. Just show up with your conference badge and have a great time!

SAS Members-Only Event

Come and tip a pint, play with your bowls, network and more at the SAS Student Members-Only Event during SciX 2016 in Minneapolis.

When: Sunday, September 18th Noon–4:00 PM

Where: Brit's Pub (http://britspub.com/)
1110 Nicollet Mall, Minneapolis, MN 55403

Just a couple of blocks from the Hyatt. For directions, use this link: https://goo.gl/JZesdo.

Please send your RSVP no later than September 1st to sasadmin@s-a-s.org to reserve your place.

SAS Wine and Cheese

The Society for Applied Spectroscopy cordially invites all SAS Members to join us at our annual Wine and Cheese Awards Reception.

When: Tuesday, September 20, 2016 starting at 7:30 PM

Where: Hyatt Regency Hotel
Great Lakes Ballroom B/C

This is a member's only event. Please consider renewing your membership now!.

SAS Student Poster Showcase and Awards

Please join us in celebrating the future of spectroscopy as SAS students showcase their research and compete for the annual SAS Student Poster Awards.

When: Sunday, September 18, 2016, 7–9 p.m.
(during the SciX mixer)

Where: Hyatt Regency Hotel

Sponsored by The Society for Applied Spectroscopy and SciX.

Member Profile: David Tuschel

Education and Career

David is currently a Raman applications manager at Horiba Scientific in Edison, New Jersey. He received his B.S. in Chemistry at University of Wisconsin-Milwaukee, and his M.S. in Chemistry at University of Arizona. David then started his professional career first at Eastman Kodak for 17 years, then moved on to ChemImage Corporation for seven years, and to the University of Pittsburgh for one and a half years, before starting to his current role at Horiba. He has been a SAS member for more than 30 years and is actively involved in many SAS activities, currently serving as the SAS New York Section Chair, and also as a member of SAS web committee.

David became interested in science very young. He was certain that he would grow up to be either a priest or a scientist by the second grade. As fate had it, a young man dating David's sister gave him a chemistry set as a Christmas gift when David was in the fifth grade, which irreversibly shifted his future career path. David became interested in electrochemistry when he started his undergraduate education at University of Wisconsin–Milwaukee, working under Prof. Benjamin Feinberg. Prof. George Wilson from University of Arizona happened to visit David's lab and encouraged him to apply to graduate school. During his first year in Arizona, David became fascinated by Prof. Jeanne Pemberton's research in surface enhanced Raman spectroscopy using various electrochemical methods, starting his lifelong relationship with Raman spectroscopy. David joined SAS around 1985. According to David, he joined SAS more out of a sense of obligation at that time, without really thinking about what he could get out of it.

After graduate school, David started his first professional job at Eastman Kodak, which he described as tremendously helpful and formative. His role over those 17 years was mostly analytical characterization in two analytical science organizations and the corporate research group. There were a myriad of opportunities for him to work with many talented people and on a variety of projects involving materials and chemistry and solid-state physics. He continued to utilize Raman spectroscopy, together with many other tools, to study all kinds of solid state materials which had applications in CCD fabrication, X-ray storage phosphors, nonlinear optical materials, waveguides, optical recording materials (CD-Rs), polymers, inorganic materials, semiconductors, high-temperature super-conductors, and OLEDs, to name just a few. David considered that period of time as the golden days of R&D, not only at Kodak, but also at many other large organizations such as Bell Labs and IBM.

David then spent seven years at ChemImage. Subsequently he worked with Prof. Sanford Asher on UV-resonance Raman spectroscopy for a year and a half at the University of Pittsburgh as a Senior Researcher. His research there focused on explosive detection by deep-UV excitation. David's prior experience with lasers turned out to be invaluable for the research group.

David put that all his prior academic and industrial experience in Raman spectroscopy to good use once he arrived at Horiba. His primary responsibilities are to support customers, sales engineers, and at the same time try to do some work that will help advance the applications of Raman spectroscopy. Currently he is very interested in applying Raman spectroscopy to study 2D crystalline materials such as MoS2, WS2, and other transition metal dichalcogenides, and graphene, etc. He finds his prior Kodak experience extremely relevant and valuable. However, one challenge he often faces in his current work is the limited resources he has in pursuing such interest. One way to cope with such limitations is through collaboration with his customers. Collegiate collaborations have yielded multiple publications co-authored by David and his customers.

The Future of Raman Spectroscopy

In David's opinion, collaboration between vendors and customers can be especially beneficial now when the increasingly user-friendly instruments are attracting more and more non-expert users who know less and less about Raman spectroscopy. However, David does believe that it is critical for users to understand instrumentation and hardware involved in Raman spectroscopy. While there are circumstances where we can simply treat Raman spectrometers as a tool (e.g., hand-held devices to detect narcotics by police), this is not always the best way to use this type of instrumentation. Users still need to be knowledgeable in both chemistry and spectroscopy instrumentation in order to interpret data correctly.

David sees several things such as AFM-Raman, tip-enhanced Raman, and Raman for biological applications as trending for how Raman will be used in the near future. However, he believes the application of Raman spectroscopy to the characterization and development of 2D crystal, such as graphene, transition metal dichalcogenides, phosphorene, boron nitride materials, will pick up considerably by the materials industry. Strong Raman signals can be observed from monolayers or only a few layers of such materials. David notes that usually only very weak Raman signals can be observed from thin layer of materials (nm) without electronic enhancement and thus it is peculiar that these semi-conductor-type materials have such strong Raman signals. Raman is very sensitive to crystal structures and chemical bonding and can probe them non-destructively. David states, "We can excite photoluminescence with the same Raman excitation, yielding orthogonal information. Due to all these, Raman spectroscopy turns out to be a very good fit for the study of such materials."

Involvement in SAS

David has been involved in various SAS activities throughout the years. He is doing this out of passion for his profession and, also equally important, out of his respect for his fellow SAS members and officers. They are the reason that kept David going and putting in the effort. David also writes several installments on spectroscopy-related topics in Spectroscopy. It takes a lot of effort, but he believes it is worth it. Besides his academic advisors, David is grateful to have the privilege to work with several people he calls mentors: Jim Lavine, Pat Lambert, and Gustavo Paz Pujalt, amongst many others.

David's advice for new SAS members or students interested in joining, "Understand that you are joining a profession, which means life-long study. Five years after you get your degree, what you knew at the time you got your degree should constitute less than 50% of what you now know. And this should progress throughout your career. Louis Pasteur once said, 'Chance favors only the prepared mind.'"

When not working hard and studying new applications for Raman spectroscopy, David loves reading—history, philosophy, and theology are some of his favorite genres. He is an avid motorcyclist and started riding in 1974. His current ride is a Harley Davidson Road King Custom. He also enjoys volunteering and participating in activities of his local Catholic parish.

Contributed by Xiaoyun (Shawn) Chen, xchen4@dow.com

Telephone: 301-694-8122
FAX: 301-694-6860