

THE Vandalchemist – AN OCCASIONAL NEWSLETTER FROM THE DEPARTMENT OF CHEMISTRY AT THE UNIVERSITY OF IDAHO

Observant readers of the Vandalchemist will note a change in spelling (past issues had various combinations of upper- and lower-case letters, underlines and italicizing. Dr. Shreeve reports that Dr. Malcolm Renfrew, founder of the Vandalchemist, preferred the current spelling and in honor of Dr. Renfrew we adopt his preferred spelling.

This issue of the Vandalchemist begins on a very sad note: Dr. Thomas E. Bitterwolf died in his office on January 30, 2019 (<https://bit.ly/2Ngfmi7>). This tragic event has cast a definite pall over the department with a little relief coming from the extremely well-attended and upbeat New Orleans-themed Celebration of Dr. Bitterwolf's life held in the Bruce M. Pittman Center on February 8. Dr. von Wandruszka provided the following tribute:

In his 30 years on the Chemistry faculty at the University of Idaho, Tom Bitterwolf created a special legacy as a researcher and teacher. The east side of the 3rd floor hallway in Renfrew Hall, where he had his office and lab, was always a beehive of activity. Students went there to learn, to do research, and also to socialize. Tom was always ready to receive and mentor them. Inspiring students was his *forte* – there are countless examples of young people who started successful chemistry careers in Tom's lab.

Tom Bitterwolf, who hailed from New Orleans, LA, came to us in 1988 after teaching at the Naval Academy in Annapolis, MD. He was a Navy veteran, who retired with the rank of Commander. After making his home in Moscow with his wife Carrie and their two daughters, he became deeply involved in community issues. He was, among other things, a tireless worker for the Boy Scouts of America and a board member of the Moscow Co-op. Tom also had a taste for the finer things in life, including his 1000-bottle wine cellar! He will be missed by his family, his colleagues, and his many friends.

Another recent loss from the Chemistry family: Larry McBride died on January 4, 2019 (https://dnews.com/obituaries/lawrence-larry-cary-mcbride-of-troy/article_6404ffa0-1894-11e9-84c9-3b3357f19544.html). Dr. Shreeve provided the following tribute:

Larry McBride arrived on campus in 1963 through a special U. S. Navy scholarship program for Active Duty Navy and Marine Corps enlisted members. He earned a Bachelor of Science degree in Chemistry at the University of Idaho in 1967 and was commissioned as a U. S. Naval Officer. Through a special U. S. Navy-Pepperdine University scholarship program, he completed a Master's degree in Business Administration at Pepperdine in 1978. After serving in a variety of sea and shore assignments, he was assigned to the University of Idaho Navy ROTC program. McBride was extremely popular with his students and every year he was chosen by one of them as the "most influential faculty member" and invited by the student to the annual Vandal Alumni Association banquet. He retired from the U. S. Navy to become a member of UI staff as Assistant to the Head of Chemistry in 1983. Larry knew everyone on campus so that any problem which needed solving got solved immediately. After six years in chemistry, he joined the University Research Office as Assistant to the Vice President for Research and Management Assistant for Idaho EPSCoR (Experimental Program to Stimulate Competitive Research) Program. His many talents were recognized and use of these were made on UI faculty and staff selection/hiring committees including those for President and Provost; as a member and chair of the Staff Affairs Committee; in a leadership role in initiating the Shared Annual Leave Program for UI staff; service as an extremely influential member of planning and coordination teams for the renovation and construction of several UI buildings and special support facilities, e.g., air conditioning of Renfrew Hall; as an author of external, competitive research-support and education grant proposals which impacted science and engineering research and research support programs at UI as well as those jointly accomplished by UI and Idaho State University and Boise State University upward of \$20 million. The great service rendered by McBride to this university was recognized twice by the UI Alumni Award for Excellence, twice by the outstanding UI Staff Employee of the year, and the UI College of Letters and Science Excellence Award. Upon Larry's retirement from the University, the Lawrence C. McBride Prize was established to honor his many years of distinguished

staff service to the University of Idaho. This Prize is awarded annually to recognize university staff members who have demonstrated the highest standards of service to the institution, the same standards exemplified by Larry McBride. Larry McBride died on January 4, 2019.

View from the Top (Ray von Wandruszka, Professor and Chair)

It has been a long time since the last *Vandalchemist* was published and it would be difficult to summarize everything that happened since then. So let us focus on the issues with the most visible consequences. To do so effectively, we have to look a little beyond the confines of the Chemistry Department.

First, it must be admitted that we are in difficult times – not just the Department, but the University as a whole. As is so often the case, the lack of money is the root of the problem with the University facing a \$2.5M deficit. This is a direct result of increased expenses and of lagging enrollment numbers across the institution, which means reduced revenue, which, of course, affects our ability to function. For some time now, the key challenge has been to do more with less. Sometimes this is possible, sometimes it is not. The effects are most seriously felt in the loss of faculty and staff positions and the resulting personnel shortages.

Fortunately there are bright spots. For one thing, action has been taken in the matter of faculty and staff salaries, which have customarily lagged behind those at our peer institutions. This is being addressed through a progressive program of market based adjustments. Our Chemistry colleague Patrick Hrdlicka, as immediate past chair of the faculty senate, played (and continues to play) a pivotal role in this enterprise. Similarly, the packages that we offer our graduate teaching assistants have been vastly improved; we may not be 100% competitive yet, but we are well on our way!

As far as the make-up of the Department is concerned, some of the people who you may remember as fixtures in Renfrew Hall are no longer around. Retirees include Bob Kirchmeier, Peter Griffiths, Dan Edwards, Sharon Hutchison, Gary Knerr, LeNelle McInturff, Barb West, and Dave Gover. Others, including Suzanne Aaron, Lodi Price, Laila Cornwall, Jakob Magolan and Dinara Storfer, have left for greener pastures. Sadly, some of our old friends have passed away: Jim Cooley (2017, *Chemistry and Engineering News* obituary - <https://cen.acs.org/content/cen/articles/95/i44/James-H-Cooley.html>), Leszek Czuchajowski (2016), and of course Malcolm Renfrew (*Chemistry and Engineering News* obituary <https://cen.acs.org/articles/91/i45/Malcolm-M-Renfrew.html>) himself, on his 103rd birthday in 2013.

New faces around the department include Peter Allen (Assistant Professor, Bioanalytical); Kris Waynant (Assistant Professor, Organic/Organometallic); Sebastian Stoian (Assistant Professor, Inorganic). There is also Lee Deobald, the Director of the Mass Spectrometry Core, which is now incorporated in the department and housed in the basement of Renfrew Hall. Yuwei Kan serves as our Laboratory Coordinator, i.e. she runs Laboratory Services. This job was, long ago, done for about two decades by John DeMoura and then by Dan Stelck. After Dan (who became a Senior Instructor) it passed from person to person, and we hope that we have reached a stable plateau now.

The office is presently staffed by Cindy Ball (Department Manager, 2008), Deb Cissell (Administrative Assistant, 2012), and Travis Wells (Financial Specialist, 2016). Our glassblower is Aaron Babino, and the Electronics Technician position, once held by Jay Papillon, Rick Jonas, Doug Winberg (who unexpectedly died in 2014) and Todd Beninghaus, is in the process of being filled.

Our major instruments have had their ups and downs. On the downside, the X-ray diffractometer, although putatively in working order, has seen no real use in recent years because we lost the X-ray crystallographer position. The NMR suite, on the other hand, was vastly improved in 2016 through the purchase of a new 500 MHz Bruker instrument with cryoprobe. Kudos to Richard Williams for being the PI on the proposal (Murdock) and shepherding the acquisition! We are fortunate to have Alex Blumenfeld, whose knowledge of NMR is second to none, in charge of the three NMR spectrometers in our possession. An interesting recent development is the acquisition of a Mössbauer spectrometer, coming to us through the efforts of Sebastian Stoian and his contacts at the NSF National High Magnetic Field Laboratory (the MagLab). This is a somewhat rare instrument that allows us to do research that few other universities have access to. The problem with Mössbauer spectrometry is that it requires vast quantities of liquid helium, which is prohibitively expensive. To circumvent this, we are in the process of acquiring a liquid He recycling system, which, being 98% efficient, will all but eliminate the problem. The system (which is not cheap!) is financed internally, with

an important contribution coming from our donations account. It will also be hooked up to the NMR magnets, and to a SQUID magnetometer that belongs to Physics and will be moved to Renfrew Hall.

The inside of our building is undergoing incremental changes, primarily to take care of wear-and-tear issues. The latest upgrade was a nice renovation of the two large lecture halls, REN 111 and 112, which now have new air handling equipment, an improved sound system, and better lighting. The hallway outside has brand new seating accommodations for students (installed at Cindy's bidding). Somewhat longer ago, the Lab Services facility on the second floor was expanded and provided with a dedicated hood and office space for the Coordinator. This, too, was Cindy's initiative.

In the immediate vicinity of Renfrew Hall we see covered bicycle parking, new concrete walkways, a large emergency generator in a brick enclosure, and some additional service parking. Interestingly, the large cooling equipment facility that was built as a lean-to of Renfrew not too long ago has been decommissioned and gutted. The inhabitable part of the brick structure now houses custodial service entities. Renfrew Hall is cooled remotely *via* a new chilled water tower next to the golf course.

Last, and maybe least, yours truly is now in his 13th year as Department Chair of Chemistry. After I serve out this 4th term (July 2022), I will be well into my dotage. In addition, since July 2015 I have been Interim Chair of Physics, but this will come to an end after the 2019 spring semester. Something to look forward to...

News from the Department

Dr. Peter R. Griffiths (Professor and Chair Emeritus) was recognized by the UI for his exemplary scholarship through the award of an honorary doctorate at the 2018 Spring Commencement Ceremony and he kindly contributed the following:

It's scary to think that I retired a little more than 10 years ago. Although I no longer have a research group, I still try to keep my skills in teaching, research and consulting honed. One of the more challenging research/consulting projects in which I have been involved is a collaboration with the Occupational Safety and Health Division of the Centers for Disease Control and Prevention in Spokane. A group there was working on developing a technique for measuring the amount of respirable nanoparticulate silica (α -quartz, $d < 4 \mu\text{m}$) that a miner could have inhaled during an 8-hour shift. The silica particles would be collected on a PVC filter installed in a small device worn by the miner. The idea was that the filter would be removed from its holder at the end of the shift and its infrared spectrum would be measured so that the miner would know if he had been exposed to more than a certain amount of silica. Because many different minerals and coal dust are trapped on the filter, some fairly sophisticated multivariate statistics (chemometrics) are required to process the data. Fortunately, I had been on the Ph.D. committee of a very bright graduate student in Chemical Engineering, Andy Weakley, who knew more about chemometrics than I ever would, and the two of us worked with the scientists at CDC, Spokane to develop a successful approach. The CDC group was then tasked to study airborne diesel particulate matter down mines. (There is a lot of diesel-powered machinery required for modern mining.) Even though the project is not quite finished, we have enough data to make us confident that our techniques will be successful. For both of these applications, the current technology must be made in the lab and it takes days, and even weeks to learn the result, by which time it is too late. Using the instruments that we are developing, the answer should be available in less than a minute! Andy is now a postdoc at UC Davis and is applying the computational techniques that he developed for the project to the study of airborne particles in urban atmospheres. This is a great example of how departments with different strengths can collaborate.

I continue to be part of the team that teaches a week-long course in the interpretation of infrared and Raman spectra (www.ircourses.org). This course started at MIT but has been given at Bowdoin College in Brunswick, ME every July for the past 40+ years. Bowdoin has a beautiful campus and attracts top-rank students (with wealthy parents!). The scientists and technicians who attend our course love the classroom facilities and location at Bowdoin but are less than happy with the dormitory facilities – the mattresses are very thin and aren't conducive to a good night's sleep - and fewer and fewer of the people taking the course opt to reside on campus. As a result, we have decided to give the 2019 course in Philadelphia.

I started a three-year term as Editor-in-Chief of the journal *Applied Spectroscopy* almost exactly on the date that I retired. LeNelle McInturff, who many of you will remember as the department secretary, retired on the same day as I did and I was able to persuade her to become the journal secretary, a job that she fulfilled with her customary grace and efficiency. After three years, I stepped down to the #2 editorial position of the journal which I gave up in the spring of this year and I am now one of the eight associate editors. There must be a lesson here. Does everyone slip slowly into oblivion on retirement?

I am also collaborating with a former postdoc in my group, Limin Shao, who is now associate Professor of Chemistry at the University of Science and Technology of China. Limin wrote a book on quantitative analysis for Chinese students. It uses cell-phone apps for the accurate solution of problems, which struck me as unique enough that in the right form it could be successful in the USA, so I offered to help him translate it to a form that would be suitable for American students. It turned out that it was too complex for second-year US undergraduates, but we are changing its form so that it will be a monograph rather than a textbook.

This summary of my life in retirement would not be complete if I did not mention that I lost my wife, Marie, about 2½ years ago. She was a wonderful support and we had a great marriage. She called me the visiting professor because of all my consulting and conference activities.

Finally, I was surprised and very honored to receive an honorary D.Sc. at commencement this summer. It capped a wonderful career at the University of Idaho.

Other Honorary Degree Recipients

Two other UI chemists have received honorary doctorates from the UI: Malcolm M. Renfrew (upon his retirement in 1976) and Dayaldas T. Meshri, (2018- <https://www.uidaho.edu/events/commencement/honors>). PhD 1968 with Dr. Shreeve. Dr. Shreeve kindly provided the following tribute:

Encouraging the return of Malcolm MacKenzie Renfrew (BS, MS) to his alma mater was probably among the most worthwhile decisions ever taken by a University of Idaho administrator! Professor Renfrew returned to the university after a Ph. D. as a duPont fellow at Minnesota and a stunningly successful career in the American chemical industry, including the development of the fluoropolymer, Teflon, at duPont de Nemours and Co., Inc. (Arlington, NJ) as supervisor of product development. He had the privilege after WWII of delivering the first public presentation on this development at a national ACS meeting. He left duPont for General Mills in Minneapolis where he was director of chemical research and development. He co-invented and patented the epoxy/polyamide coatings which were used widely in industrial applications and were publicized for “painting under water” to arrest corrosion in oceanic oil-drilling rigs. This discovery was recognized as one of the most important developments in coatings. Following his role as director of R and D at Spencer Kellogg in Buffalo, NY, he returned to UI as department head to build an outstanding department of chemistry. He was the originator and editor of the *Vandalchemist* which connected chemistry and related alums to the current department. He helped to upgrade many other chemistry departments throughout the nation through his role as staff associate of the NSF-supported Advisory Council on College Chemistry. He retired in 1976, but continued his service to the University of Idaho and to chemistry. In addition to being “Mr. Chemistry,” Dr. Renfrew was also “Mr. Chemical Safety.” He served as editor of both the Safety Column in the *Journal of Chemical Education* and *CHASNotes*, as well as constantly working to improve laboratory safety in academic laboratories across the country. Also, as a result of his interest and encouragement as Director of Patents for the Idaho Research Foundation, the number of patent applications which issued from this campus increased markedly! Dr. Renfrew received numerous awards and honors in recognition of his accomplishments, including the Safety Award of the American Chemical Society Division of Chemical Health and Safety. His alma mater awarded him an honorary D. Sc. The Manufacturing Chemists Association Award and the James Flack Norris Award recognized his excellence in teaching. He received the Harry and Carol Mosher Award of the Santa Clara Valley section of the ACS for contributions to the American Chemical Society and to the profession of chemistry. Renfrew was elected a fellow of the American Chemical Society. For many years now, a continuing weekly colloquium, the Malcolm M. Renfrew Interdisciplinary Colloquium, remembers and builds on the extreme breadth of his interests. His interest in improving the University of Idaho was one that continued to make this campus a better place to work and live for as long as he lived. His good ideas and his enthusiasm have had an impact on nearly every aspect of the University. This lives on through the

magnanimous generosity to the University of Malcolm Renfrew and his wife, Carol. It was most fitting that this distinguished alumnus, teacher, administrator, and human being was honored by naming the Physical Sciences Building, Malcolm M. Renfrew Hall.

Student Chemistry Awards 2018

Excellence In Chemistry Awards



Dorothy Catey



Amanda Vu



Judah Stelck

Cooley-Juve Award



Jeremy May

American Institute of Chemists Award



Morgan Spraul

William H. Cone Award



Sleight Smith

Vandalchemists' News

Current Faculty

Peter B. Allen (Assistant Professor-<https://www.uidaho.edu/sci/chem/people/faculty/pballen>)

I'm Peter Allen, and I joined the Chemistry Faculty in 2015 in the Analytical Division. It is an honor to get to work in Peter Griffiths' lab and office. I grew up in the Pacific Northwest (close to Seattle) and my family has deep roots in Idaho. I spent summers fishing in the Targhee and on Henry's Lake at my uncle's cabin. My Ph.D. is in analytical chemistry from the University of Washington (mostly microfluidics), then I went to the University of Texas for postdoctoral training in biochemistry. I am currently working on DNA biotechnology for analyses of biological samples. The long-term goal of the lab is to have a fluorescence assay that responds to nucleic acid and protein analytes.

In our 2017 paper, my first student Tulsi and I demonstrated a system that would release DNA from a particle and then capture that DNA on a second particle. This DNA "signal" activated sensor particles, causing them to light up. The mechanism was a designed DNA walker that processively "walked" around on the surface of the particle, generating fluorescence as it went. Our results appeared in *Nature Scientific Reports* [<https://www.nature.com/articles/s41598-017-04316-1>]. The project was exciting both as an analytical system and as a "mimic" of biological signaling. Biological signaling is a critical process for many diseases as well as healing after injury.

The lab is moving toward a detector system that will respond to real cell signals. Cytokines are one class of proteins that act as cell signals. They have diverse biological functions including activating the immune system during infection and initiating the healing process after injury. The particular molecule we are working on is called interleukin-6. It shows up after injury, after infection, and even as cells age and become senescent. The ability to detect interleukin-6 and other intercellular communication molecules will ultimately help many fields of medicine.

We have been working on adapting our DNA detection system to proteins using aptamers. Aptamers are pieces of single-stranded DNA that bind to proteins. We have evolved aptamers to EGFR, a virus, and against interleukin-6 (this last is still in progress). All of this came together in Tulsı Damase's dissertation. Tulsı is the Allen lab's first Ph.D. graduate. Tulsı's review of the intersection between designed DNA (like our biomimetic walkers) and evolved DNA (like our aptamers) will appear soon in *ACS Bioconjugate Chemistry* [<http://pubs.acs.org/doi/10.1021/acs.bioconjchem.8b00810>].

Rebecca Baylon (Lecturer)

Rebecca recently joined the Chemistry department as an instructor for Chem 101 last fall. She has enjoyed teaching freshmen and getting to know more of the UI community after a couple semesters teaching in the UI Chem Engineering department. Born and raised on the east coast, Rebecca came out to the Palouse for graduate school and appreciates the natural beauty and breadth of outdoor activities in the Pacific Northwest.

I. Francis Cheng (Professor-<http://www.webpages.uidaho.edu/ifcheng/>)

A new form of carbon was discovered in my lab a few years ago. At the time, it was mistakenly assumed to be graphite or a multilayer graphene. As a consequence it was named GUITAR (Graphene from the University of Idaho Thermolyzed Asphalt Reaction). Most characterization techniques indicate it is graphitic in nature. However, electrochemical studies indicated that GUITAR does not conform to any known carbon allotrope. Three properties distinguish it from graphites and graphenes. In terms of structure, atomic force microscopy indicates that it is not atomically flat as expected of graphites and graphenes but has wavy planes. Second, as an electrode it has electron transfer rates that exceed all other carbon allotropes. Lastly, it has the highest measured resistance to corrosion when compared to all other electrodes. It exceeds all other materials including graphene in electrochemical characteristics. Synthesis of GUITAR is simple with undergraduates producing near gram quantities in an afternoon. The procedure can be tuned to make flat surfaces of several square centimeters to nanostructures of high surface areas. The University of Idaho has received a patent on its electrochemical applications. Sensor research is being funded by a large European company which will pursue 6-12 international patents with the University of Idaho. Encouraging results are being produced in battery, fuel cell and water purification studies. Further funding is being sought for these GUITAR based devices. Please refer to my web site for videos and any latest news.

Patrick J. Hrdlicka (Professor-<https://www.webpages.uidaho.edu/~hrdlicka/>)

I am a nucleic acid chemist with research interests at the interface of chemistry, molecular biology, and materials science. My laboratory aims to develop novel oligonucleotide- and nanomaterial-based tools for biomedical applications, with a key emphasis on development of designer nucleic acids for specific and sequence-unrestricted targeting of chromosomal DNA. The research community has sought to solve this challenge for more than three decades, motivated by the prospect for molecular tools that will enable regulation of gene expression, detection of specific DNA regions, and manipulation of genomic DNA. We have used our *Invader* probes for detection of DNA fragments from food pathogens and of specific target regions on Y-chromosomes from male bovine cells under mild conditions, paving the way for new diagnostic strategies. We are very excited about this project, which has resulted in ~20 publications, a recently issued patent, and funding from several entities (NIH Eureka, three grants from the Idaho SBOE, donations from a biotech company). Other projects pursued by my laboratory include the development of i) RNA-targeting antisense oligonucleotides with optimized hybridization and pharmacokinetic profiles, ii) probes for detection of nucleic acid targets harboring single nucleotide polymorphisms, and iii) sensors for detection of biological and chemical threat agents. I note with immense pride that former graduate students from our group have gone on to become post-docs at top-tier institutions (Scripps, Oxford, Stanford) and valued employees at leading companies in the field (Ionis Pharmaceuticals, Alnylam Pharmaceuticals, Alios Biopharma, etc).

Nicholas and Benjamin



My career path took an unexpected turn in 2015, when I was elected to UI's Faculty Senate, which is empowered to act for UI's faculty in all matters pertaining to the immediate governance of the university. Further career derailment occurred when I was elected vice-chair and chair of this body for the 2016-2017 and 2017-2018 terms. This platform allowed me to raise awareness and influence our then-new upper administration on matters such as poor employee morale; opaque internal funding flows; and inadequate compensation levels for faculty, staff, and – especially – graduate students. In addition to advancing Senate's regular function and attempting to break down trust barriers between the faculty and upper administration, I served as the co-chair of the Faculty Compensation Task Force, which was charged with developing a market-based compensation model. I am pleased to report that market-based compensation models now are used to calculate 'fair' target salaries for faculty, staff and graduate students, which is something I expect will dramatically improve our ability to recruit and retain top talent. While I am slowly transitioning back to a regular faculty role, I did accept a 30% part-time term appointment as a Special Assistant to the Provost and Executive Vice President to further refine and implement the faculty compensation model.

I've been in the chemistry department since 2006. My wife, our two sons, and I love Moscow's charm and the recreational opportunities that the area brings. We love to fish, hike, bike, ski, and camp. Another major interest of mine is table tennis (<http://tinyurl.com/yybs87aw>), a sport that I picked up in my native Denmark when I was six years old. In fact, I serve as the academic advisor of the Vandals Table Tennis Club, which has a highly motivated membership base of 50+ players, who meet up to four times per week. I mostly travel to regional tournaments but have also participated twice in the US Open (doubles winner in the 40+ years category in 2017) and the 2018 World's Veteran Championships (finished among the top-64 in singles and top-16 in doubles in the 40-44 age bracket), which were held in Las Vegas with 4000+ participants from around the World. Work hard - play hard. It goes hand in hand.

Daniel S. Stelck (Senior Instructor-<https://www.uidaho.edu/sci/chem/people/faculty/daniels>)

This year my teaching responsibilities were the full year of organic chemistry, both lectures and lab: Chem 227, Chem 278 in the fall; Chem 278, Chem 372 and Chem 374 in the spring. I am the advisor for the College of Science Ambassador program. I also oversee the orientation of incoming graduate students.

On the administrative side, I assign graduate students teaching assistant responsibilities. When we need additional teaching assistants, I round up willing and capable undergraduate students to fill the vacant spots.

I attempt to get faculty their teaching assignments for upcoming semesters so they can be entered in to CLSS (the UI class scheduling software).

I'm also involved in outreach, performing demonstrations for visiting students. This year I organized "Spooky Science" on October 30th. This is a science demonstration show featuring approximately 20 undergraduate students from the College of Science Ambassador program and volunteers from the Chemistry Club. The goal of the show is to spark the interest of children of all ages in the fields of science. This was the first year we had changed the time of the show from December due to conflicts with other events. Since it was the day before Halloween, we also had a costume contest. There were approximately 150 people in attendance.

Personal Info: I have two sons, both Vandals. Judah graduated last year in Chemical Engineering and Chemistry. He is now a nuclear engineer working as a civilian for the US Navy in Pearl Harbor. Kael is currently a junior in Chemical Engineering, Chemistry and Mathematics. He will be adding another year as a Vandal since he just added math as a third major. My wife, Lulu, just graduated from the U of I with a PhD in Education, with a focus on STEM education. I hail from Minnesota. I enjoy ice fishing (really any kind of fishing, though ice fishing is my favorite) and the outdoors as a whole.



Sebastian S. Stoian (Assistant Professor-<https://www.uidaho.edu/sci/chem/people/faculty/stoian>)

Sebastian Stoian joined the UI Department of Chemistry as an Assistant Professor in August 2017. He received his undergraduate degree in Chemistry from the University of Bucharest. As an undergraduate student he performed research in the labs of Prof. Marius Andruh, where he became intensely passionate about coordination chemistry and molecular magnetism. To further his knowledge of magnetism, Sebastian moved to Pittsburgh, PA, where he joined the group of Prof. Eckard Münck at Carnegie Mellon University. Under Eckard and Prof. Emile Bominaar's mentorship Sebastian became adept at using field-dependent Mössbauer and EPR spectroscopies to unravel the electronic structure of iron-containing species. For his graduate work, Sebastian received the inaugural MCS Guy C. Berry Award. After earning his Ph.D. in chemistry, Sebastian joined Prof. Dan Nocera's group at MIT, where he pursued his interest in energy-related research. Most recently, Sebastian was awarded the Jack E. Crow postdoctoral fellowship at the National High Magnetic Field Laboratory (MagLab) in Tallahassee, Florida. As a MagLab fellow, he collaborated with numerous research groups from across the country and from abroad. His current research relies on a spectroscopy-guided approach to discover new metal-based, functional materials.

Eduard Tyapochkin (Lecturer)

Eduard graduated from Moscow State University, Department of Chemistry, Moscow, Russia and received his Ph.D. from the University of North Dakota. He taught Chemistry as Instructor at United Tribes Technical College, Bismarck, ND and as a Postdoctoral Associate at Oklahoma State University. He is currently an instructor for CHEM 275, Chemistry of Carbon Compounds, at the University of Idaho.

Kristopher V. Waynant (Assistant Professor-<https://www.uidaho.edu/sci/chem/people/faculty/kwaynant>)

Dr. Waynant, ably assisted by Dr. Amy Nielsen (WSU Chemistry), under the auspices of the Washington-Idaho Border Section of the American Chemical Society, has spearheaded the ACS Chemistry Olympiad competition for the last few years. Both Kris and Amy have chaired the WIBS.

Interdisciplinary Chemistry in the IRIC



In late 2016, the Integrated Research and Innovation Center (IRIC) opened on the University of Idaho campus and began taking solicitations for space requests. The IRIC space committee solicits for multidisciplinary teams that are tackling integrated or complex problems. Equally, teams declare their research focus so as to be amenable to other wet lab spaces (you can't put potato virus next to forest ecologists) so as to not only have the right space but potential for future collaborations. Teams took tours of the facilities and requested specific areas with these ideas in mind. Asst. Prof. of Chemistry Kristopher V. Waynant was one of those taking the tour along with an integrated team of chemical and materials science engineers. The team calls their project the CEAAM (pronounced "seam") as the Chemical Engineering of Advanced and Applied Materials. Waynant and coworkers are working on a variety of projects that encompass the development of new polymeric materials for integrated diffusion control. Currently they are modifying the polymeric hydrogel layers that are encapsulating a consortium of microbes that can break down chlorinated hydrocarbons into non-toxic byproducts. "While the bugs can eliminate these compounds you can't swamp the bugs with the compounds or they will die," said Waynant. "We are modifying the polymer surfaces with various functionalities to slowly allow the organics in and let the acidic material out." This project, entitled "Building a Better Biobead," was awarded funding by the NSF for \$330,000 with the team: PI Prof. James Moberly and Co-I's Waynant and Mark F. Roll. Equally, the team is exploring ways to remove trace metal impurities of various materials through mild methods. Lastly, Waynant's group is looking into the development of polymeric calcium ion sensitive electrode materials as part of a \$1.03 million NASA project entitled Space Grade Flexible Hybrid Electronics in collaboration with the Boise State University Department of Materials Science Engineering. Waynant is the lone investigator from UI on the project. Waynant's team is helping develop and manipulate the conductive inks for sensing capabilities that will be printed on flexible/wearable

electrodes for long-term space missions. The integrated nature of the IRIC has Waynant working (and walking) all over campus.

Retiree, Former Colleague, and Student News

Suzanne Aaron

Suzanne Aaron (department manager 1990-2006) is working as a sponsored programs administrator in the UI Office of Sponsored Programs, in the pre-award office. She will retire from the UI at the end of September 2019, after 30 years of service. After some months of general laziness and travel in and out of the USA, she plans to do some volunteer work, such as tutoring reading and math to youth who need help in the local schools or practicing conversational English language with local international scholars and their families.

Suzanne has fond memories of working in Chemistry and says the faculty, staff, and students were like family. She served under chairs Peter Griffiths and Chien Wai. Suzanne occasionally walks through Renfrew Hall and thinks about how much she learned from the various things she was involved with there, such as the big HVAC renovation in the 90's, remodels, grants, ChemStores, and safety inspections.

John T. Bays (Tim)

I arrived at the University of Idaho in August of 1992 with the intention of joining Dr. Tom Bitterwolf's Research Group after spending five years on active duty with the U.S. Navy. Dr. Bitterwolf was my academic and research advisor while I studied at the U.S. Naval Academy, and he convinced me to join him at the UI for graduate school. We worked on developing an understanding of the photochemical behavior of a variety of organometallic compounds in frozen glass matrices and in supercritical fluids. In 1997, after graduating with my doctorate, I became a postdoctoral researcher with Drs. John Linehan and Don Camaioni at Pacific Northwest National Laboratory (PNNL). With Dr. Camaioni, I studied the reaction mechanisms of a series of uncatalyzed and metal-catalyzed alkane oxidation reactions, and with Dr. Linehan, I investigated the time-dependent mechanisms of organometallic reactions using time-resolved Fourier transform infrared spectroscopy. After nearly two years as a postdoc, I was hired to teach chemistry at the U.S. Military Academy (USMA) at West Point, NY. Following my first year at USMA, I married Dr. Amy Bjerke, a UI Department of Chemistry alumna, and we were both lucky enough to teach chemistry as civilian faculty members at USMA for the next five years. Following my promotion to Associate Professor, we returned to the Pacific Northwest, where I accepted a position as a senior research scientist at PNNL. While I've been at PNNL, I've been fortunate to participate in many research projects, the most recent of which seeks to develop a better understanding of fuels for gasoline and diesel internal combustion engines. In parallel to my career as a chemist, I maintained my ties to the U.S. Navy through the Navy Reserve and served in a variety of reserve units. In 2009 I was mobilized by the Navy to serve in Baghdad, Iraq for a year as a member of General Raymond Odierno's (Commanding General, United States Forces-Iraq) staff, where I was a liaison between the U.S. Embassy, the CG and the Government of Iraq. I retired from the Reserves in December of 2013 as a commander. Amy and I live in West Richland, WA, and have two lovely daughters, Christine (16) and Johanna (10).

W. Daniel Edwards

I'm glad someone is revitalizing Malcolm's newsletter. I find it hard to imagine how he found the time and energy to do it for all those years.

We are just back from our Christmas visit to Henry, our son, in Sandpoint where it was cold and snowy as one has come to expect. All are well and both Henry and Sarah continue to turn out their creative works-- though in somewhat different media. I'm in good shape for an old guy, but largely spend my time in idle pursuits and daily chores. Tuesday shopping features heavily on my calendar since the CO-OP offers a 10 percent discount to seniors. We live in exciting times.

The only former students I see are the ones who still live and work in Moscow, and now that everyone (but me) is on FaceBook, I hear very little from the outside world. No news is good news so I assume all is well.

Sorry I am not able to provide any real meat for the newsletter. Hope all are doing well. Give my best to all. Have a happy and prosperous new year.

Mariusz P. Gajewski

Since health improving, life-saving, biologically active molecules have always been of interest to me, I dedicated my career to this field. The link between the way atoms in molecules are connected in three dimensions and how those frequently simple molecules modify functioning of entirely complex living organisms such as ourselves has been a puzzle to me. Now, with my knowledge, experience and skills, starting with a pen and paper I can design and eventually physically make chemical compounds capable of altering physiology. To be able to do that, first, I had to learn the rules of synthetic organic chemistry. I was awarded the M.S. degree in organic chemistry (1998, Adam Mickiewicz University, Poznan, Poland) for synthesis of biologically active derivatives of quinolizidine, such as sparteine - a naturally occurring alkaloid. After moving to the US, I enrolled in a Ph.D. chemistry program at the University of Idaho (1998, Moscow, Idaho), under the supervision of Dr. Czuchajowski. My research interests were in DNA reactive novel porphyrins, pharmaceutical leads in photodynamic therapy. After completion of the program in 2003, as a postdoctoral, I joined a team of neuroscientists (Center for Structural and Functional Neuroscience at the University of Montana) involved in research on neurodegeneration, cancer, addiction and other disorders of the central nervous system. During that period, I developed skills of a medicinal chemist, such as computer assisted rational drug design. These skills, together with my expertise in synthetic organic chemistry, allowed me to succeed in designing and producing molecules capable of interacting with biological targets. One of those targets, protein xCT, caught my special attention due to its involvement in an incredibly vast number of biological processes. While at the University of Montana, I was working in the group of Dr. Thompson (research on VGLUT transporter), Dr. Esslinger (SN1, ASCT2 and xCT transporters) and Dr. Natale (G4 DNA and cancer). Remarkably, Dr. Natale was a member of my Ph.D. committee while I was a student at the UI; we met again in another state, at another institution, almost five years after my graduation. It is a small world, as the cliché goes. To further my career and to develop teaching skills, I accepted a position as a full-time chemistry faculty at Flathead Valley Community College (2010, Kalispell, Montana). Interestingly, it is also where I learned to write independent external grant applications (NASA) and to lead a research group of undergraduate students. In 2012, I transitioned to a tenure-track Assistant Professor of Chemistry position in Russellville at Arkansas Tech University (ATU). After teaching and conducting research at ATU for six years, I was promoted to Associate Professor and was granted tenure. My main efforts focus on developing an externally sponsored biomedical research program at ATU, with support from NIH. Additionally, several of my side projects involve porphyrins; it looks like I learned enough about them at the UI to put them to good use!

Taking advantage of the local weather, I got deeply interested in growing super-hot peppers in my “free time”. When the weather is right, boating on the beautiful Lake Dardanelle is frequently an option. To interview for my current position, in 2012 I flew in from Kalispell, MT. I dressed professionally, all in black; it was 55 °F in Montana. When I landed in Arkansas it was 112 °F, with the downtown Russellville thermometer displaying 118 °F; the campus tour was interesting... That day I thought about my last winter in Idaho, when the temperature dropped to -30 °F for a few days.

I frequently reminisce over my stay in Idaho and Montana; these are good memories. Hunting in Idaho and floating the rivers in Montana. I remember with pride and sadness all the chemists whom I had a pleasure to meet, who passed away; RIP. As to Moscow, it is frequently on my mind to visit. Just to say “Hi” to a few close friends, check if Renfrew Hall is still there, to look at the rolling hills again, and maybe relax at John’s Alley.

Chun Li

I came to UI in 2001 to study Medicinal Chemistry with Dr. Nicholas Natale (currently at University of Montana) and Dr. Ronald Crawford (passed away early 2018). The project I worked on was the synthesis of potential G-quadruplex stabilizers for telomerase inhibition. After graduating with a Ph.D. degree from UI in 2006 and one year of postdoc training at Washington State University, I moved to Ithaca, NY, where I started my current job as a Lab Instrument Coordinator at Ithaca College. My daily job is to maintain all the analytical instruments in the Chemistry Department and to train students and faculty members on how to use those instruments, such as spectrometers, NMR, GCMS, HPLC, DSC-TGA, etc. Just like playing with Legos, it is fun and satisfying to take things apart and put them back together to make them work. As the department expanded its instrument possessions, I got to learn how to use single crystal XRD and interpret XRD data. Although my knowledge on XRD is still very limited, I am very happy that this got me re-connected with Dr. Natale and

recently with Dr. Richard Williams for collaborations on structure elucidation using XRD. Ithaca's winter tends to be dreary due to the lack of sunshine. So, in the precious summer time, if I'm not working in our vegetable garden, I would always enjoy hiking along many tree-covered gorges and waterfalls in the area. I miss those waving prairies in the Palouse Country so much and wish I could someday walk along 6th Street and see the Kibbie Dome again.

LeNelle McInturff



Peru trip 2016

I treasure my retirement book from the department, filled with photos and messages and memories of chemistry days and people. It was a definite privilege for me to get to work with world-class chemists and meet so many outstanding students and researchers from all over the world. I've been able to travel and see more of the world for myself in recent years, with trips to Peru and the Galapagos Islands in 2016 and a river cruise on the Danube last summer. I seem to get busier and busier with volunteer activities in several local non-profits. I am serving as president for the board of directors for the Latah County Historical Society this year. I also find time for fun, playing pinochle every week and exercising my mind with a crossword puzzle every day. I enjoy catching up with fellow local UI retirees like Sharon and Fred Hutchison, Gary Knerr and his wife Jane, and Barb and Mike West. Barb and I get together with not-yet-retired Suzanne Aaron when our schedules permit. I caught up with Zoe Cooley in the Moscow-Pullman Airport in December as she was waiting to board a plane on her way to Alaska for Christmas with her son Ben. As for "curricular cousins," I regularly see Earl Bennett, former dean of the College of Science, as he is also on the board of directors for the Historical Society.

It's hard to believe, but it's been nearly 10 years already since I retired from the Chemistry Department. My biggest regret was that I was not able to keep *The Vandalchemist* newsletter going in my last years after Dr. Renfrew was no longer able to gather all the news. I do hope that this reboot is successful. I look forward to catching up on the lives and adventures of UI chemistry alums, faculty, staff and friends. When Dr. Williams asked me to look over the first drafts of this edition, I jumped at the chance. (That way I would get a sneak preview of all the news!) Now, of course, I'm hooked and stand ready to "proofread" future editions, too.

Though I am connected to some via *LinkedIn* so I get notices of work anniversaries and other postings, I am not active on social media. I

Brendan Twamley

Dr. Brendan Twamley – former University Crystallographer and faculty in the Department of Chemistry - left UI in 2008 due to family reasons and is now working in Trinity College Dublin, University of Dublin in the School of Chemistry as the crystallographer and School Radiation Protection Supervisor.

General News

Dr. Janet Nelson (<https://www.uidaho.edu/sci/chem/people/faculty/jnelson>) joined the UI in summer 2016 as Vice President for Research and Economic Development and Professor of Chemistry. She came to us from the University of Tennessee, Knoxville where she was the Associate Vice Chancellor for Research Development. Dr. Nelson was named a 2018 Fellow of the American Association for the Advancement of Science for her contributions to the field of inorganic chemistry. Prior to Dr. Bitterwolf's death, this brought the number of AAAS Fellows in our department to three: Dr. Nelson, **Dr. Jean'ne M. Shreeve** (<https://www.uidaho.edu/sci/chem/people/faculty/jshreeve>) and Dr. Bitterwolf. Dr. Shreeve and **Dr. Richard V. Williams** (<https://www.uidaho.edu/sci/chem/people/faculty/williams>) are also Fellows of both the Royal Society of Chemistry and the American Chemical Society.

Dr. Ginger E. Carney (<https://www.uidaho.edu/sci/biology/people/faculty/gingercarney>) moved from Texas A&M University, where she was a Professor in Biology and the Associate Dean for Assessment and College Climate, to join the UI in the Fall of 2017 as Dean of the College of Science and Professor of Biology. Dr. Carney has been a frequent visitor and good friend to the Chemistry Department. We plan a more detailed

profile of her in a future issue, but she did provide the following teaser: *Well, I have 3 teenagers and all the angst that comes with that! The first heads to college this fall, so I am acutely attuned to what parents of our students feel/deal with as well as needs of students. I have a very talented husband who is a Professor in Biological Sciences. My new-found favorite hobby is snowshoeing and I just bought a new 4-wheel-drive Jeep that is trail rated so I can explore more of Idaho on the weekends this summer!*

Dr. Patrick J. Hrdlicka reminds readers that he maintains the departmental LinkedIn site: <https://www.linkedin.com/groups/5158259/> and encourages everyone to join the group.

My plan is to publish this newsletter, with LeNelle's invaluable assistance, on a regular basis with *at least* one issue per year. To help in this endeavor, please send me your news, views and observations (williams@uidaho.edu). If you are in contact with any other friends of the UI Department of Chemistry, please ask them to e-mail me so that I can add them to our mailing list should they not already be on it.

Click on [Vandal~~al~~chemist](#) to download a pdf version of the [Vandal~~al~~chemist](#)

Richard Williams