

Fall 2015 Issue

# ELEMENTS

The Alumni Magazine of the Department of Chemistry at Virginia Tech

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## TELL US YOUR STORY!

Do you have an interesting story that might be featured in Elements? Do you know someone who should be featured? Or would you simply like to say hello?

Contact the Department Chair,  
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## The Chair's Corner

J. M. Tanko, December 2015

Welcome to the Fall 2015 edition of the Chemistry Department's alumni newsletter **Elements!** What is most striking about this issue (to me at least—an unbiased observer) are the numerous accolades and awards earned by our faculty, staff, students, and especially, alumni. In the latter context, it is particularly gratifying for us to see how well our students do in the "real" world, to share their stories (both professional and personal), and to celebrate their success and accomplishments.

I am also proud to tell you that once again, the University has formally recognized our department as "exemplary." Faculty, staff, and student participation in K-12 outreach continues to define the VT experience, and in recognition of these efforts, the department was co-recipient of 2014 University Exemplary Department Award "for effectively developing and sustaining innovative and effective departmental approaches to fostering *Ut Prosim* (That I May Serve) at the undergraduate or graduate level." The funds received with this award will be used to support the service and outreach activities of the Chemistry Club and Alpha Chi Sigma, as well as promote K-12 outreach efforts. (The Department also was awarded the 2009 Exemplary Department Award, recognizing its achievements in experiential learning and undergraduate research.)



The Chemistry Department has an outstanding international reputation for research, as is clearly shown by the number and quality of the papers produced by our faculty. A number of papers this past year were published in the best journals, including *Science*, *Angewandte Chemie*, *Journal of the American Chemical Society*, *Accounts of Chemical Research*—just to mention a few. Most notably, this past year Chemistry faculty members gave over 150 invited lectures and presentations at universities and professional conferences. Several lucrative collaborations have been established with investigators at other universities on STEM and STEM-H topics such as malaria prevention, drug discovery, and fuel cells. Faculty members in chemistry were conducting interdisciplinary research well before it became fashionable.

## The Chair's Corner...

Our faculty continue to receive local and national awards in recognition of their scholarship. Of particular note: Daniel Crawford is an ACS Fellow, Tim Long is Virginia's 2015 Outstanding Scientist, and Ed Valeev received the prestigious Dirac Medal, which honors the outstanding theorist under the age of forty.



Our search for a new faculty member in computational chemistry led to the successful hiring of Dr. Nicholas Mayhall from UC Berkeley. Prof. Mayhall joined our department in August 2015. In addition, the search for an instructor in general chemistry was successful, and Dr. Kurt Neidigh is now an instructor in our department teaching general chemistry. (Kurt is a VT alum, having earned his PhD with David Kingston). We are now looking to fill two tenure-track positions. One of these searches is in the broad topical area of energy and environment. The other is an open chemistry search, in conjunction with the College's Academy of Integrated Science.

In addition to new faces, the department also has a new face. With help from the VT Department of Marketing (Donna Wertalik, in particular), a team of designers and programmers were hired, culminating in a major overhaul of the department's website ([www.chem.vt.edu](http://www.chem.vt.edu)). In addition to being much more visually compelling, two staff members (Ms. Laurie Good and Mr. Donald Neel) work together to ensure the content is kept current and up-to-date. In addition, digital signage has been installed at the entrances to Davidson, Hahn South, and Hahn North to provide news, announcements, and descriptions of faculty research.

The commitment of the Chemistry Faculty to undergraduate and graduate education remains strong, evidenced both by the awards they earn as teachers and mentors, and by the accomplishments of their students. The undergraduate experience for chemistry students continues to improve.

In earlier issues of Elements, I told you about dramatic changes to the general chemistry laboratory curriculum that

afford all students (majors and non-majors) an exceptional laboratory experience; similar changes have been made in our upper-level labs to improve content and quality. And most notably, our new lecture hall (Davidson 281) opened this year and now accommodates all of our large sections of non-majors general chemistry (CHEM 1035/6) and organic chemistry (CHEM 2535/6). Simply stated, the new facility is spectacular in every way—seats are comfortable, viewing angles for the screens/boards are optimal, and the room is equipped with an adjacent lab for preparing lecture demos. In addition to modern technologies (screens, monitors, projection equipment, etc.), it also has a blackboard—because as y'all already know, *chemistry lectures just do not quite sound right on a whiteboard!*

Planning for Davidson Hall Phase II (renovation of the now-vacant historical section) has resumed. If planning and construction remain on schedule, the building will open in January 2017. With the help of DCAC, we are planning a Davidson re-dedication ceremony, tentatively scheduled for late April 2017 (*vide infra*). Nobel laureate, Prof. Robert Grubbs, has graciously accepted our invitation to speak at this event.

This past year over 100 students were involved in undergraduate research for course credit, and others participated over the summer either as wage employees, or as participants in the long-running Summer Undergraduate Research Program (SURP). Through these venues, students have ample opportunities to communicate their results in writing and orally at regular research group meetings, departmental symposia, as well as at professional meetings. In the Spring, our alumni advisory council (DCAC) plays an active role at our undergraduate research poster session in the context of a "best poster" competition. The resulting interactions between our current students and alumni create a special connection; indeed, this event is one of the highlights of our academic year.

The Department of Chemistry expanded its offerings in the new Virginia Tech Winter Session, offering courses such as General Chemistry (CHEM 1035, taught by Mr. Jared Spencer) and Physical Chemistry for the Life Sciences (CHEM 4015, taught by Prof. Hervé Marand). These classes also utilized novel approaches to teaching/learning such as flipped classrooms, etc. The winter session, which typically runs December 27 - January 16, means that students participate in a highly focused and intense learning experience with a single class (vs. taking several classes over a longer period of time in a regular semester), and seems to be highly effective for many of our students. Certainly, student response (and success) has been outstanding.

**Reminder: SHARE YOUR NEWS! Elements depends on it! And Happy Holidays to the entire Hokie Family!**



The Department of Chemistry welcomes **Assistant Professor Nick Mayhall**. Prof. Mayhall earned his BS in Chemistry from University of Southern Indiana, and his PhD in Physical Chemistry from Indiana University (advised by Krishnan Raghavachari). Nick joins the department after completing a postdoc at UC Berkeley, working with Prof. Martin Head-Gordon. Prof. Mayhall's expertise

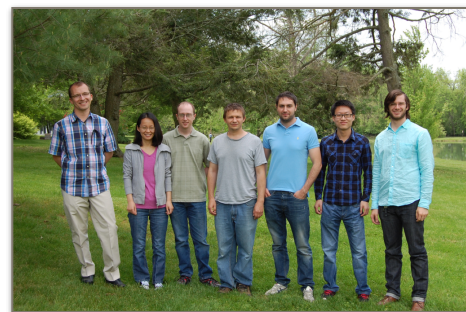
includes computational modeling of gas-phase reactions and electronic structure method development. His research activities at Virginia Tech will focus primarily on the development of novel quantum chemistry methods and the application of these methods to investigate the chemical foundations of renewable energy sources, with specific focus on developing new low-cost algorithms for modeling multiple electronic excitations and impurities in excitonic materials.

**Timothy E. Long**, Professor of Chemistry and Director of the Macromolecules and Interfaces Institute, (pictured with VT President Tim Sands) was named as one of three Virginia Outstanding Scientists for 2015. The 2015 Virginia Outstanding Scientist recipients are at the forefront of their fields and are recognized for their contributions to future technologies. Over the past 16 years, Prof. Long has received more than \$41 million in research funding and maintains a 20-member, interdisciplinary research group focusing on macromolecular structure and polymerization processes for the development of advanced technologies including drug and gene delivery, sustainable food stocks, adhesives and elastomers, and biomaterials for health and energy. He has over 220 scholarly publications in



peer-reviewed journals and is credited for 50+ invention disclosures and patents.

**Prof. Edward Valeev** (pictured with his research group) was selected to receive the 2015 Dirac Medal, which honors the outstanding computational chemist in the world under the age of 40. The award is given annually by the World Association of Theoretical and Computational Chemists (WATCC). Prof. Valeev was recognized for developing practical methods for predictive descriptions of electrons in molecules. Prof. Valeev is the second VT faculty member to be honored with a Dirac Medal (Daniel Crawford earned the title in 2010).



Members of the Chemistry's Analytical Services—**Kenneth Knott, Bill Bebout, Geno Iannacone, Medhi Ashraf-Khorassani, and Naraimhamurthy "Murthy" Shanaiah**—have been named this year's recipients of VT's award for "**Outstanding Performance in Labs.**" The five are honored for their exemplary work servicing undergraduate education and training, graduate and faculty research, other universities, and regional industry in the areas of NMR spectroscopy, mass spectrometry and chromatography. In addition to receiving individual plaques, the team will split a \$2,000 prize.





**Prof. John B. Matson** was awarded a five-year NSF Faculty Early Career Development (CAREER) Award through the Biomaterials Program. Matson's work with hydrogen sulfide gas ( $H_2S$ ) as a vital biological signaling molecule will provide a basis for examining  $H_2S$ -releasing materials as stimulators of angiogenesis, the process through which the body makes new blood vessels. This \$530K

CAREER award will facilitate the synthesis, assembly, and biological characterization of the first-ever  $H_2S$ -releasing gels and enable researchers to better understand the effects of  $H_2S$  signaling on angiogenesis.

**Prof. Amanda Morris** was elected the Solid State Chair for the Inorganic Chemistry Division of the American Chemical Society. The Division represents a diverse body of scientists who come together to understand and promote the richness of the chemistry of the elements. Prof. Morris will be responsible for developing and coordinating programming in the area of solid state inorganic chemistry at national ACS meetings.



**Dr. Harold M. McNair**, Professor Emeritus of Analytical Chemistry, was selected as the 2016 recipient of the American Chemical Society Award in Chromatography sponsored by Supelco/Sigma-Aldrich. The award recognizes outstanding contributions to the field of chromatography with particular consideration given to the development of new methods.



Retired **Prof. Jim Wightman** competed in his sixth triathlon in September (the oldest contestant in the race), a hobby he decided to take up at age 74. This time, however, his son (Bill) and 10-year old grandson (Liam) were at his side at the Claytor Lake event (pictured). Jim finished second in the 70-80 age group, noting that "some youngster at age 71 beat me"! His story was featured in the The Roanoke Times (9/11/15).



**Prof. Daniel Crawford** was named an American Chemical Society Fellow for 2015. This year, this highly-competitive program honored just 78 ACS members worldwide for outstanding achievements in and contributions to science, the profession, and the Society. Prof. Crawford was recognized for the development of high-accuracy reduced-scaling quantum mechanical models of the optical properties of chiral compounds, including first-principles simulations of optical rotation and circular dichroism spectra. His many service contributions include organizing national symposia, serving as the Secretary/Treasurer of the Division of Physical Chemistry, and for advancing graduate education nationally through his organization of Software Summer Schools.





**Prof. Amanda Morris** (pictured at the Virginia Science Festival educating the next generation of chemists) is the lead PI on a new multi-investigator award (including Chemistry professors John Morris and Lou Madsen) entitled "MRI: Acquisition of an X-ray Photoelectron Spectrometer for the Development of

Materials and Catalysts for Next Generation Energy Solutions." This \$788,360 National Science Foundation award leverages the expertise of PIs and senior personnel from across multiple disciplines to explore emerging energy technologies, which will significantly improve our understanding of the effects of surface chemistry on efficacy. This award will advance research and education at all levels to explore energy solutions (e.g., energy storage and generation), thereby solidifying VT as a leader in the energy field.



**Prof. Felicia Etzkorn** (pictured above) is a co-PI on a newly-funded project on "CHEM+C: Integration of Environmental Chemistry and Computing to Advance Evidence-based Reasoning, Problem Solving, and Computational Thinking (CT) in Middle School Students." This two-year, \$1,250,000 award funded by the National Science Foundation will investigate a method of broadening access to CT by providing it in a context that all students take: 8th Grade Integrated Science. Students will investigate chemical systems with visual models, modify and adapt the code to better represent the chemical systems using CT, based in a pedagogy of structured scientific argumentation.

**Alumni Distinguished Professor Emeritus Jim Wightman** is also recognized for his MANY contributions to the Alumni Association — more than 100 in fact. He is pictured with his "Hokie Centrum Award" for speaking at over 100 chapter events. We thank him for his tireless contributions to promoting Virginia Tech Chemistry!



**Prof. John Morris** will head a collaborative team of scientists from VT, Emory University, Brookhaven National Laboratory, Yesheva University, and the Army Research Laboratories to explore "The Catalytic Decomposition of Chemical Warfare Agents." The \$2.6M award from The Department of Defense will facilitate the use of high-energy X-rays to decipher molecular scale reaction pathways when highly toxic gases impinge on a new class of catalytically active materials. By developing rules for predicting how chemical bonds are broken and formed during the gas-surface reactions, the research team will develop new strategies for creating the next generation of catalysts that effectively decompose dangerous gases upon contact. The new technology could be used in gas masks, air-handling filters, and incorporated into smart materials that detoxify ambient air.



# Department AWARDS and Staff NEWS

**Prof. Diego Troya** received both major departmental awards this year: The Jimmy W. Viers Teaching award and the John C. Schug Research Award. For the Viers Award, Prof. Yee noted: "He strikes the perfect balance between rigor and simplicity that a Pchem class for the non-mathematically inclined must achieve." For the Schug Award, Prof. John Morris remarked that Prof. Troya "is able to identify fascinating research topics and investigate them with tremendous ingenuity. His publications are all scientifically very sound, well constructed, and written in a way that teaches his audience something new about science...You would be hard pressed to find someone who makes a bigger impact on research."



**Geno Iannaccone** was honored with the Harold McNair Staff Service Award for 2015. During the award ceremony, Prof. Tanko pointed out that Geno was especially helpful with the departmental conversion from a common nitrogen gas supply to individual lab sources. Specifically, he consulted a number of researchers about supply system design, and performed several modifications and installations for various groups. His efforts not only saved money, but allowed research to continue uninterrupted. Moreover, Geno's above-and-beyond service to the department during the multiple moves associated with the repopulation of Davidson Hall exceeded even the most "Simon Legree-like" expectations!

**Prof. Brian Tissue** received the "Alan F. Clifford Faculty Service Award" for 2015. Brian was recognized for his service to the Department as chair of the safety committee. The safety committee was very active during the past few years with numerous groups moving laboratories and research groups acclimating to shared space in the renovated Davidson Hall. Brian coordinates student peer inspections and serves as the Department liaison with University EHS staff.



Chemistry's **Kristin Cox** earned her "Supervisory Excellence Certificate" this year. This six-course program (two core courses coupled with an additional four electives) is designed to provide leadership insights into the critical roles, responsibilities, and expectations involved in successfully coordinating and directing teams to achieve organizational goals. She also received her certificate from the "Administrative Professionals Development Program," which is a nomination-based program whereby participants increase their knowledge of campus policies, procedures and programs. This latter training proved particularly invaluable when she had to educate her fellow (and reluctant) staff members on the new VT travel reimbursement system.

# Prof. James F. Wolfe

## Dept Head: 1981-1990

This is another installment in a series of articles about Chemistry's former heads

Two hours can fly by when you're talking with Prof. Jim Wolfe, one of the most engaging and gracious people you're ever likely to encounter—an increasingly rare combination of being interesting and interested.

Prof. Wolfe can claim an enviable record of service to Virginia Tech and the wider community, having recently celebrated five decades in Blacksburg. The only son of two public school teachers in York County, PA, Dr. Wolfe always knew he wanted to be an educator. After a BS in chemistry from Lebanon Valley College, a PhD in organic chemistry from Indiana University and a postdoc at Duke University, Jim joined VT Chemistry in 1964 and was elected head in 1981. He held the post for nine years, during which time he helped to establish the Harvey W. Peters Center for the Study of Parkinson's Disease. He recalls the experience of being head as "fun, interesting, and not particularly trying or worrisome—we all shared common goals." Dr. Wolfe can take credit for hiring a number of current faculty, including Dept. Chair, Jim Tanko.

In 1990 he was invited by then-Provost Fred Carlisle to be considered for Vice Provost for Academic Affairs, where he thought he could make a bigger impact for the College of Science. Although later a candidate for the position of provost, Dr. Wolfe was quick to note that "not getting the job was the best thing that ever happened to me." He returned to Chemistry in 1995, "retired" in 1996, and then directed the Peters Center on a half-time basis.

Enter longtime friend John G. Rocovich, Jr., a member of the Virginia Tech Board of Visitors and the individual responsible for securing funding for the Peters Center. In 2000, Rocovich called on Prof. Wolfe to assist in developing an osteopathic medical school. As a Chemistry faculty member, Jim recalled that although many good students were applying to medical schools, they were having trouble getting in due to the keen competition for so few slots. "I began to realize that there was a shortage of physicians, but no shortage of excellent prospective doctors." At the time Wolfe, Dr. Neal Castagnoli (former Peters Chaired Professor), and Rocovich were visiting DO (Doctor of Osteopathic Medicine) schools around the country, the impending shortage of physicians the U.S. had

become strikingly evident to nearly everyone associated with medical education—hence the need and inspiration to create a school of medicine in Blacksburg. After two years in the planning, the Edward Via College of Osteopathic Medicine (VCOM) opened its doors in 2003 with Dr. Wolfe as its president. He described his 12 years as president as a "constant learning experience—learning about medicine, learning about medical education, learning about physicians." Dr. Wolfe has since overseen the addition of two VCOM branch campuses in Spartanburg (SC) and Auburn (AL). In total, the three campuses will eventually graduate over 500 DOs a year.

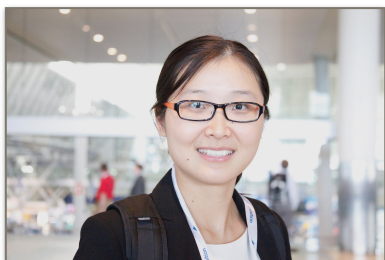
Although he retired from VCOM a year ago (but continues to serve on the Board of Directors), Dr. Wolfe still maintains an office across the street from the main campus. He and his wife Nancy have no plans to relocate, especially since he has a grandson here as an undergraduate and a second considering becoming a Hokie. (By the way, many alums may remember Nancy Wolfe, pictured with Jim, from her 13 years as a Schiffert Health Center nurse!) When asked what keeps him busy these days (besides traveling, golf, and reading), Jim likened his work pace to something one of the "Big Bang Theory" characters (supposedly faculty members at Cal Tech) once said: "I'll think about things most of the time and then every once in a while I'll write something down."

When I was heading over to interview Dr. Wolfe for this profile, I asked Jim Tanko if there was anything in particular I should ask him. Dr. Tanko's reply? "Yes...ask him if there's life after being a department head." After two hours of learning about a remarkable academic journey—half of it traveled after stepping down as head of the Department of Chemistry—that was a question that clearly did not need to be asked.



# “Her passion for discovery is second to none!”

## Graduate Student Profile: Keren Zhang



It will surprise no one who knows PhD candidate Keren Zhang well—and particularly not her advisor, Prof. Tim Long—that she presented her final graduate seminar just days after an emergency

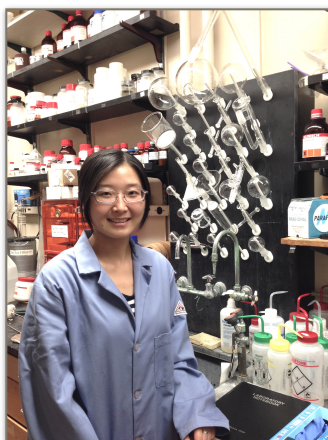
appendectomy. Keren has set high standards for herself ever since she began her doctoral work at Virginia Tech in 2011.

Keren comes by her love of chemistry naturally, with a dad who's a chemistry professor at Huaihai Institute of Technology in Jiangsu Province, north of Shanghai. Her mother is also an academic who teaches law. Keren earned her BS in polymer chemistry at the University of Science and Technology of China in Hefei working in Prof. Weidong He's lab. Knowing that she would earn her doctorate in the U.S., she honed her English skills by watching every episode of “Friends,” her sitcom of choice.

After a year as a PhD candidate in biochemistry at the University of Texas Southwestern Medical Center in Dallas, she transferred to VT and joined the Long research group. Over the course of her graduate school, Keren's work has targeted four principal areas: (1) bio-inspired supramolecular polymers for pressure sensitive adhesives, (2) nucleobase-functionalized block copolymers for thermoplastics and nanofabrications, (3) DABCO salt-containing copolymers for ionic adhesives and membranes, (4) isocyanate-free polyurethanes from renewable resources. Says Keren: “My passion for research lies on bridging the gap between academic research and commercial applications. In collaboration with Henkel and Elevance, I established new synthesis platforms for high performance polymers to address traditional material limitations on mechanical property, processability, and sustainability.” To date, Keren has seven publications to her credit and is primary inventor on five patent applications.

Keren feels fortunate to be working with Prof. Long, whom she described as a tough, but fair and gifted, mentor who genuinely cares about his students. Smiling, she admitted that although Prof. Long has strict requirements and high expectations, she now appreciates that every last-minute deadline, every new research assignment, every

essential milestone were all skills-building exercises that enhanced her growth as an independent researcher. Keren admires Prof. Long's enthusiasm for new ideas and enduring support for his students through failures and challenges. “His keen sense of innovation and insightful perspective on polymer science are what I've been trying hard to inherit” Keren said. Prof. Long had this to say about soon-to-be Dr. Zhang: “She represents a researcher at the intersection of sciences, ranging from synthetic organic chemistry to adhesion science and molecular biology. She thrives at the nexus of polymer chemistry and emerging grand challenges for society. Keren has received a host of awards and so richly deserved. Her passion for discovery is second to none!”



And the awards are indeed impressive. In addition to a number of travel awards to present at national conferences, Keren received the “Alan Gent Distinguished Student Paper of Adhesion Society Conference,” an Eastman Fellowship, and the James P. Wightman Macromolecules and Interfaces Institute Student Award (to name a few). Keren also spent a summer at Eastman Chemical working with Dr. Emmett O'Brien (a former Prof. Tom Ward student who, it must be noted, took the editor's then-young and trusting son sledding on a beat-up dumpster lid at the VT golf course many times one particularly snowy winter).

Given her many accomplishments, one *might* think that Keren spends all her time in the lab, but she is also a skilled skier/snowboarder, a pastime she took up since moving to Blacksburg, and a fisherman on the New River. Once she graduates in May 2016, she is likely to join Dow Chemical Company in either Massachusetts or Freeport, Texas.

Ever the polymer scientist at heart, Keren Zhang recalled having a root canal last year and mentioned that she probably knew more about the chemistry of the composite the dentist used to fix her tooth than he did! And back to that appendectomy a few weeks ago—Keren was more interested in the adhesive material the surgeon used to seal her incision than in her post-op care!





The Department of Chemistry Advisory Council (DCAC) is a volunteer organization that has existed for 17 years. It consists of departmental alumni and friends who provide their collective perspectives, ideas, and financial support in order to advance the objectives of the department. Currently, DCAC has some 40 members, about 1/3 of whom meet twice a year in Blacksburg during the spring and the fall. These meetings provide opportunities for the members to learn about the research of the

Chemistry faculty and their collaborators, as well as their future research endeavors. The meetings also allow DCAC members to provide counsel to the Department Chair and Executive Committee on identified areas of concern, and to interact constructively with other faculty, staff, and students, as well as university administrators.

A project on which DCAC has had considerable success is increasing the funding for the departmental endowed funds. In fact, through the efforts of DCAC, the McNair fund is now fully endowed. DCAC also continues to make progress in its advocacy for the department on issues such as obtaining greater support from the College of Science for the Chemistry undergraduate teaching program and casting a wider net to all of the Chemistry alumni. Moreover, DCAC has now proposed the use of the forthcoming rededication of Davidson Hall as a way to celebrate the rich history of Virginia Tech Chemistry, as well as that of the university, and to enhance alumni participation in the Chemistry Department's continuing efforts to excel in both research and teaching.

**The renovation for the front of Davidson Hall, which was preserved as an icon of Virginia Tech, is "scheduled" to be completed by late January 2017.**

At its last meeting, DCAC began to implement its plan for a gala event to celebrate the Davidson Hall rededication, which is planned for late April of 2017. (Of course, a firm date will be announced just as soon as we're confident the renovations are on schedule!)

We want to make it so significant that it will receive attention nationwide—and I'm sure you'll join us in that goal! Numerous university dignitaries, as well as state and federal legislators, will be invited to attend, and at least one Nobel Laureate will be asked to participate and deliver a lecture. A tour of the new Davidson Hall and many other enjoyable activities are being planned. This will be a great opportunity to reconnect with your faculty advisor, other faculty members, and fellow students who had a substantial impact on your chemistry formative years.

We will have more about the rededication in the Spring 2016 issue of Elements — hopefully confirming a date in April 2017 for what promises to be a truly memorable event!



**Dr. Michael Borgerding** (BS in Biochem from VT; MS with Prof. McNair in 1980) received the 2015 Lifetime Achievement Award from the Tobacco Science Research Conference, which honors a distinguished scientist “for a lifetime of outstanding contributions to any and all aspects of tobacco science research or development.”



“I was surprised and honored,” said Borgerding, who joined R.J. Reynolds tobacco Company in 1980 as a junior scientist. “It is especially meaningful because the symposium theme for the Tobacco Science Research Conference this year was: ‘The

scientific basis of harm reduction and the risk continuum,’ a topic which resonated with me personally as I have spent much of my career here, together with many talented colleagues and collaborators, evaluating new tobacco products that have the potential to reduce risk. I can think of no greater lifetime achievement for any tobacco scientist than to work to reduce the health impact of tobacco in our society, and I’m very proud of the decades-long effort by Reynolds scientists to achieve that goal in the form of consumer-acceptable products.”

**Dr. Robert “Jerry” Bass**, Emeritus Professor at Virginia Commonwealth University, was named an ACS Fellow for 2015. He was



recognized for his leadership role in establishing BS and PhD programs in chemistry at Virginia Commonwealth University, and instituting a research program in collaboration with the NASA Langley Research Center resulting in numerous publications and patents. His service contributions to the ACS community are also notable. He was recognized for 50 years of service to the ACS and the Virginia Local Section; he chaired the Committees on Meetings & Expositions and Membership Affairs and served as a member of the Local Section Activities and Council Policy Committees. Most recently, he co-chaired fundraising for the 2011 Southeastern Regional Meeting (SERMACS).

**Dr. Robert Allen** (PhD with Jim McGrath in 1985) was inducted into the College of Science Hall of Distinction for 2015. Allen is currently a distinguished research staff member and senior research manager of the polymer science and technology department at IBM Almaden Research Center. In his current role, Allen leads a team of innovative



chemists and material scientists that focuses primarily on designing, building, and understanding polymeric materials for high-performance applications. Current research projects include membranes for improved separations, antimicrobial surfaces to battle adjacent infectious diseases, new catalytic processes for the creation and/or recycling of high performance materials, and materials for encapsulation and delivery of medicine.

## Former VT Professor of Chemistry and Alum, Tomáš Hudlický: From “high school dropout” to “Innovator of the Year”



Former VT Chem professor **Tomáš Hudlický** (1982 to 1995) actually dropped out of Blacksburg High School in 1969 because he thought “the place was stupid.” He didn’t officially receive his diploma until 1989 when one of his BHS classmates (who worked for then-dean Mike Ogliaruso) lobbied to see justice done. The year after he was promoted to full professor at Virginia Tech he received a high school diploma at his 20th class reunion.

Now at Brock University (Ontario, Canada), Prof. Hudlický can add “innovator” to his many other titles. The Ontario Partnership for Innovation and Commercialization (OPIC) just named him Innovator of the Year. He was recognized for developing efficient and “green” processes for the production of many medicines, resulting in a cleaner environment and relief for thousands of patients. Hudlický heads an international group of scientists focused on converting toxic waste into usable products through an “environmentally benign” chemical reaction process. In

addition to green chemistry, his research also centers on new pain and cancer medicines and natural product synthesis.

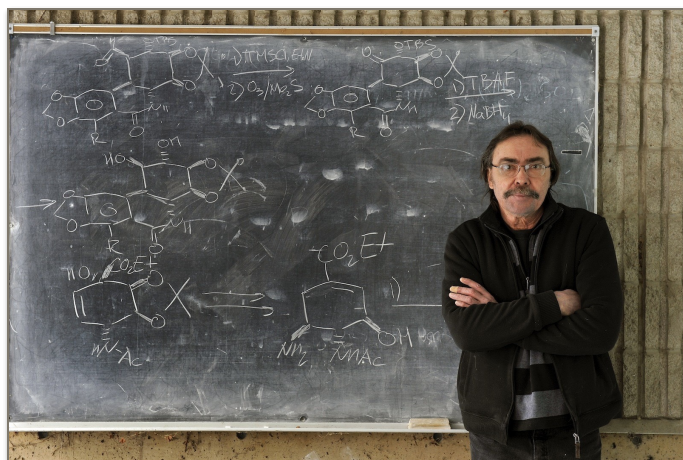
Hudlický, who joined Brock in 2003 after eight years at the Univ. of Florida, has amassed his share of honors and awards.

- In 2010, he received the Alfred Bader Award from Canadian Society for Chemistry for excellence in research in organic chemistry.
- In 2013, he was elected to the Royal Society of Canada, the highest honor a scholar can achieve in the arts, humanities and sciences.
- In 2014, he was honored with the R.U. Lemieux Award by the Canadian Society for Chemistry, which recognizes the country’s top organic chemist.
- In 2015, the Czech Chemical Society awarded Hudlický with the Hanuš Memorial Medal, the society’s highest acknowledgment for scientific achievements.

Hudlický, who is a Tier 1 Canada Research Chair in Organic Synthesis and Biocatalysis (the use of biological methods to manufacture chemicals), has more than a dozen patent applications in the pipeline. He has negotiated five licenses with a large pharmaceutical manufacturer, providing it with new processes for a more efficient production and synthesis of alkaloid compounds, which are key agents in pain control and the treatment of alcohol and drug addiction. In addition to lucrative licensing payments, other offshoots from his research include the following:

- Patenting a more efficient process for the manufacture of Tamiflu™ (oseltamivir) and additional anti-viral compounds having the potential to be more effective than Tamiflu™
- Partnering with Lorus Therapeutics Inc. (Toronto) for the development of cancer drug therapeutic candidates based on his work with the drug pancratistatin and related derivatives.

According to John Wilson, Director of Innovation and Commercialization at Brock, “Professor Tomáš Hudlický is not only an outstanding academic, but he has been Brock University’s leading innovator,” Pretty impressive for a former Hokie (Chem BS, 1973) who freely admits that he finished 14th out of his class of 14!



## Chemistry Alum Earns Multiple Honors

### Alumni Profile: Jason G. Gillmore, PhD



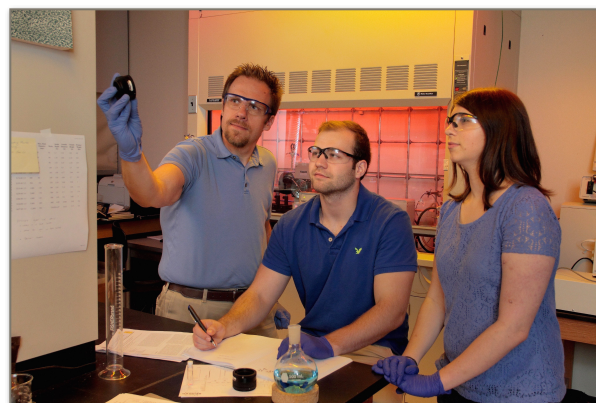
In his nearly dozen years as a researcher and educator at Hope College in Holland (MI), double-Hokie Jason G. Gillmore (Chem BS in 1996; MS with Prof. Jim Tanko in 1998; and his PhD from the University of Rochester) has racked up a boatload of honors and funding. After successes with smaller starter grants from the Dreyfus Foundation and from Research Corporation,

Associate Prof. Gillmore (on his third and final try) secured the largest single-investigator research grant by an individual Hope faculty member to date—a five-year, \$549,000 CAREER award from the National Science Foundation—with which he has been investigating photochromic dyes. “People have known about these color-changing dyes for a long time, but what hasn’t been capitalized upon by researchers is that when you change the color of something you change its electronic properties,” noted Gillmore. “There are all kind of cool things that we can do if we can first understand and then control that.” The research could have a range of practical applications in the future, everything from data storage to DNA intercalation. “We’re still in the figuring-out, fundamental understanding stage,” says Jason. Beyond his photochemistry research, Gillmore implements the Peer-Led Team Learning model in place of discussion in the organic lecture sequence, mentors future faculty through his own “Postdoc to PUI Prof” and ACS’s “Postdoc to Faculty” workshops, and incorporates authentic faculty research into the second semester organic lab course at Hope (not unlike what he experienced in the Organic Syn-Tech lab at VT 20 years ago!)

Jason’s decision to join Hope College, a nationally-recognized liberal arts college that equally stresses teaching and student-faculty collaborative research, was very intentional since he only applied to colleges with significant undergraduate research resources and expectations. According to Dr. James Gentile, Hope’s recently emeritus Dean for the Natural and Applied Sciences (who recruited Dr. Gillmore), “He showed a

tremendous amount of promise as an aspiring young scholar in chemistry and an impressive amount of promise as a science educator. He has a genuineness about him, as an individual, that comes across to his students.”

Last fall, Gillmore was featured in Hope College’s alumni magazine to simultaneously highlight his Henry



Dreyfus Teacher Scholar Award “for his work in scholarly research with undergraduate students and compelling commitment to teaching” in organic chemistry and his being named an inaugural Schaap Research Fellow. Made possible by a major gift from the Schaap Foundation, these fellowships provide a substantial unrestricted discretionary research fund to enable selected Hope College Chemistry faculty (five to date, plus the department’s three endowed chairs) to extend their research with students. Since then, Gillmore has also been recognized with both Hope’s “Janet Andersen Award for Excellence in Teaching”, and the “Vanderbush-Weller Award for Extraordinary Contributions to the Lives of Students”. He is particularly proud of the latter, since it was driven by grass-roots student support. Both honor his work with Hope students, community college students, and under-represented and disadvantaged high school students, in and out of the classroom. Research Corporation for Science Advancement has also recently retroactively named Jason to the cohort of Cottrell Scholars (class of 2006), a distinction awarded to less than 5% of the Cottrell College Science Awardees over the past twenty-five years, on the basis of research accomplishments and ongoing promise. While no financial award in itself, being a Cottrell Scholar makes Jason eligible for a variety of future funding opportunities from Research Corp.

On a personal note, Jason has been very happily married for over 10 years to Jodi, a native Michigander; in fact, he started dating her the week he accepted the job at Hope! They have two children: Anna, now in second-grade, and Will, who will be five in January. They enjoy life walking distance to Lake Michigan (which Jason insists is like “the shore” of his native New Jersey, but without the salt or sharks) – from the lake-effect snow in the winter (really!), to the wonderful beaches in the summer, and walking and biking in spring and fall. His family is also actively involved at Calvary Christian Reformed Church and Holland Christian Schools’ Rose Park Elementary. Finally, for those who



knew Jason at Tech and aren't sure these photos are of him, thanks to personal training, weight-lifting, and nutrition initiatives through Hope College's wellness program, Jason is proud to share that he is now at least 75 pounds lighter than when he graduated from Virginia Tech—and 125 pounds down from his heaviest just 3 years ago! “Having turned 40 this summer, I'm the fittest I've been since I was 5 years old!” (Weight-loss wannabes are welcome to contact him at Hope College, as he swears “If I can do it, anyone can!”)

(Photographs on p. 12 by Lou Schakel courtesy of Hope College. Jennifer Diel is credited for the Gillmore Family photo.)

## Chemistry Alumni NEWS

**Prof. Shugeng Cao** (Postdoc with Prof. David Kingston) recently joined the College of Pharmacy at the University of Hawaii at Hilo as an Associate Professor.

**Prof. Joseph DeSimone** (PhD with Prof. Jim McGrath, 1990), is a scholar, inventor and serial entrepreneur. A longtime professor at UNC-Chapel Hill, he's taken leave to become the CEO at Carbon3D, the Silicon Valley 3D printing company he co-founded in 2013. DeSimone, an



innovative polymer chemist, has made breakthrough contributions in fluoropolymer synthesis, colloid science, nanobiomaterials, green chemistry and most recently 3D printing. His company's Continuous Liquid Interface Production (CLIP) suggests a breakthrough way to make 3D parts.

DeSimone is one of less than 20 individuals who have been elected to all three branches of the National Academies: Institute of Medicine (2014), National Academy of Sciences (2012) and the National Academy of Engineering (2005), and in 2008 he won the \$500,000 Lemelson-MIT Prize for Invention and Innovation. He's the co-founder of several

companies, including Micell Technologies, Bioabsorbable Vascular Solutions, Liquidia Technologies and Carbon3D.

**WATCH Joe DeSimone's TED TALK (March 2015) on "What if 3D Printing was 100 Times Faster?" at the following link:** [http://www.ted.com/talks/joe\\_desimone\\_what\\_if\\_3d\\_printing\\_was\\_25x\\_faster#t-9989](http://www.ted.com/talks/joe_desimone_what_if_3d_printing_was_25x_faster#t-9989)

**Dr. Joe Zoeller** (PhD with Robert Holton in 1981 and former member of Chem's Advisory Board) received the 2015 E. V. Murphree Award, the American Chemical Society's national award for Industrial and Engineering Chemistry. He is also an ACS Fellow, having earned that distinction in 2010. And earlier this month, Zoeller received word that he won the 2015 Paul N. Rylander Award, which is awarded by the Organic Reactions Catalysis Society for “significant contributions in catalysis of organic reactions.” By his own admission, “2015 was a very good year!”



Triple Hokie **Matthew D. Green** (BS, ChE '07, BS Chem '07, PhD with Prof. Tim Long in 2011), completed a postdoc at the University of Delaware, focusing on the design and synthesis of stimuli-response gene therapy delivery vehicles and peptide-functionalized amphiphilic solution assemblies for targeted drug delivery. In 2014, Green accepted a tenure-track position at Arizona State University in the Department of Chemical Engineering. His research group will integrate macromolecular design with controlled synthesis techniques to prepare innovative block polymers for separation membranes and immunomodulatory therapeutics.



During Spring Break 2015 the Department was visited by three recent PhDs: **Richard Macri** (left, Gandour PhD '09), **Casey Elkins** (Tim Long PhD '05), and **Stephanie MacQuarrie** (center, Carlier PhD '05). Dr. Macri is an Assistant Professor at Catawba College (Salisbury NC), Dr. Elkins is the principal organic chemist at Eastman Chemical (Wilmington, DE), and Dr. MacQuarrie is an Associate Professor of Chemistry at Cape Breton University in Cape Breton, Nova Scotia. The special

attraction for this visit was a seminar presented by Professor MacQuarrie, entitled "Synthesis and Application of Functionalized Porous Materials." VT Chemistry faculty



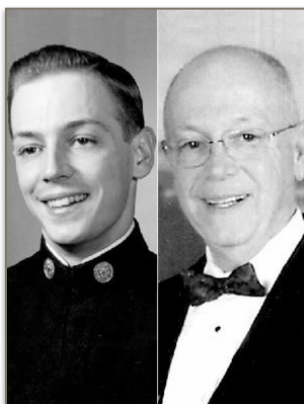
joining them in this post-seminar photo include Alan Esker, Jim Tanko, Felicia Etzkorn, and Paul Carlier.



Recent PhD recipient **Dr. Amanda Nelson** (2015 with Prof. Webster Santos) is currently on a one-year Fulbright Scholarship in Germany. She is working with Prof. Todd Marder (Universität Würzburg), developing copper-based chemistry as an alternative to palladium for carbon-carbon bond formation.

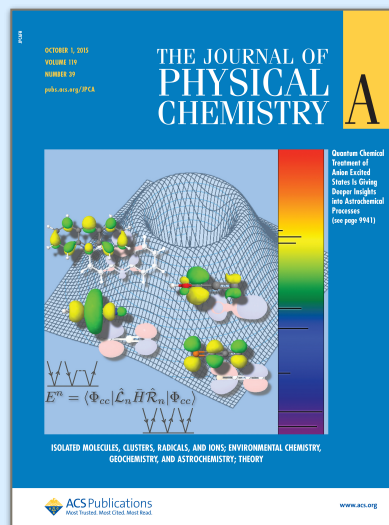
## In Memoriam

**Dr. Gene Weedon**, (BS 1960, and former DCAC member) passed away in April at age 78. Gene began his career in the U.S. Army as a 1st Lieutenant, where he served as an expert and instructor in chemical and biological warfare. He rejoined Esso Research and Engineering Company in 1964 for a short time before settling in at Allied Chemical in the Fibers Division. In 1997, he retired after 31 years as a Director of Research and Development High Performance Fibers. While at Allied, Gene directed the commercialization of Spectra high performance yarn. He accumulated 64 U.S. Patents and made the list of top 100 inventors in 2010. After retiring from Allied, he joined Integrated Textile Systems (ITS) as a Partner and VP, where he was a key player in



the commercialization of Tensylon high performance fiber. By the time he had retired from ITS in 2004, he had established himself as an internationally recognized authority on high performance polyethylene fibers. He had many exciting experiences throughout his life, most notable were being hijacked in 1969 to Cuba, going on alert during both the Cuban missile crisis in 1962 and the Kennedy assassination in 1963 and being the oldest bone marrow donor at age 50 to the oldest recipient, his sister in 1987. Gene loved traveling the world extensively, visiting over 100 countries and all seven continents, including Antarctica.

**Prof. Ryan C. Fortenberry** (PhD with Prof. D. Crawford, 2012), now an assistant professor of physical chemistry at Georgia Southern University, is becoming well known in the scientific community for his scholarly accomplishments and service to the community. He has published 30 papers in just the last two years, including three journal cover articles (one pictured), was named Secretary of Division of Astrochemistry of the ACS Division of Physical Chemistry, and he organized a major symposium at the last ACS National meeting in Boston. In terms of his currently research focus: "I use computers to simulate the way light interacts with molecules in space. This interaction of light with molecules is detectable by telescopes and provides fingerprints for the unique identification of certain molecules. This tells us all kinds of things, not the least of which are indicators as to the molecular origins of life in the universe." He has also established a reputation as prodigious eater of steak, managing to consume most of the "Double Porterhouse for Two" at a dinner for PHYS poster session judges at the Boston ACS Meeting.



**Lenore Rasmussen** (BS/BS chemistry and biochemistry, MS/PhD with Prof. J. McGrath, 2001), CTO and Founder of Ras Labs, LLC, Synthetic Muscle™ for Prosthetics & Robotics, and adjunct faculty at Worcester Polytechnic Institute, is becoming renowned in the field of electroactive materials and actuators. She is making Synthetic Muscle™, which are electroactive polymer (EAP) based materials and actuators that controllably contract, and with reversed electric polarity, expand. The near-term goal, with partial funding through the Philadelphia Pediatric Medical Device Consortium, is to



apply these EAPs that shape-morph, attenuate impact, and sense pressure for prosthetic liner/sockets and protective sports/military gear. Ras Labs is in the midst of early stage investment and



The Synthetic Muscle Experiment: Shown here is one of four aluminum protective cages housing eight synthetic muscle samples on the ISS-NL. Source: NASA, photographer Astronaut Scott Kelly

and seeks to become a supplier/partner to leading manufacturers/distributors in the prosthetics and protective gear markets. The longer term goals are to use Synthetic Muscle™ to create robotics and prosthetics, particularly for the hand and arm, which work, feel, and appear human, and by self-sensing pressure, can provide touch. Ras Labs received a MassChallenge Center for the Advancement of Science in Space (CASIS) Award in 2013, tested various EAP formulations with additives and coatings for radiation resistance at the Princeton Plasma Physics Laboratory (PPPL) in 2014, and the Synthetic Muscle Experiment was launched to the International Space Station National Laboratory (ISS-NL) on April 14, 2015 (press conference, NASA TV, <https://www.youtube.com/watch?v=MtTWWuBytV0>), with an expected return to earth in 2016. The Synthetic Muscle Experiment is testing these robust EAPs for radiation resistance in space in order to advance our understanding and ability of EAP-based materials, actuators, and robotics capable of life-like motion to operate in extremely challenging environments in space and on earth.

## Jennifer Dickson recalls her Appalachian Trail Experiences

I graduated from Virginia Tech twice thanks to its great Chemistry Department. Once in 1986 (BA) and again in early 1991 (MA). I have worked for a printing ink company in R&D and regulatory compliance roles for 18 years. It's the kind of job you don't think about while you are still in school.

What I would like to share within the pages of Elements, however, is what I do when I am NOT working. Over the course of 11 years, I have hiked the entire Appalachian Trail from Georgia to Maine. I had many adventures along the way. A group of us decided to start in Georgia in 2002. We hiked for nine days and crossed the state line into North Carolina. We then did The Smokies, the Shenandoahs, the 100-mile wilderness in Maine, and so on. The area around Blacksburg is fortunate to have some lovely parts of the trail close by. Angels Rest, Dragon's Tooth and Tinker Cliffs are all within striking distance of the Virginia Tech campus.

The trail has three basic types of terrain. The southern Appalachians, the Mid-Atlantic and New England. All are quite interesting in their own way. The southern Appalachians are filled with beautiful plant and animal life. We sighted the most bears in The Shenandoahs. The terrain is up and down, but not horribly difficult. The Mid-Atlantic area is characterized by long flat ridges. There are more towns along the trail in this region and beautiful river crossings. However, the AT saves the most challenging stretch for the end. New England brings tough terrain and above-treeline views. The White Mountains and the Mahoosuc Range are not to be underestimated. Life on the trail involves backpacking and primitive camping. However, you do meet interesting and friendly people in the trail towns along the way.

Hiking the trail took lots of planning—at a bare minimum arranging shuttles to a starting point, booking plane flights, figure out food drops, and more. The northern terminus of the trail is Mount Katahdin in Maine. To reach

the top involves much more than a leisurely stroll in the woods. One must ford streams, scramble over boulders, and walk above the treeline. It is a 4000 ft. climb and a



microcosm of the whole trail.

Hiking the trail in sections requires goal setting, planning and discipline. I had to keep in shape for years and plan on two weeks of hiking 15 mile days every year. It was difficult at times, but the beauty and experiences of meeting other hikers made it a pleasure every year. It was always fun to see what the trail had in store each year. It requires you to live simply and see what the day brings. I completed the trail in the summer of 2013. Achieving this goal will always be a special memory for me.



**And in the category of "Needs No Further Explanation"! (from 11/21/15)**

## Profs. Tim Long and Joe Merola named as Fellows by American Association for Advancement of Science (AAAS)

(article courtesy of Steven Mackay, Communications Director for the College of Science)

Professors **Timothy E. Long** and **Joseph S. Merola** have been named Fellows of the American Association for the Advancement of Science (<http://www.aaas.org>), the world's largest scientific society—just two of only 347 scholars nationwide being elected to the AAAS in 2015.

Fellowships are awarded for an individual's scientifically or socially distinguished efforts to advance science or its applications. Long and Merola will be honored on Feb. 13, 2016, at the AAAS annual meeting in Washington, D.C.

Prof. Long is being recognized for his distinguished contributions in the field of macromolecular science and engineering, particularly for the synthesis and characterization of novel polymeric compositions and structure-property relationships.



Director of the university's [Macromolecules Interfaces Institute](http://www.mii.vt.edu/) (<http://www.mii.vt.edu/>) and a PhD alumnus of Virginia Tech, Long spent 10 years as a research scientist at the Eastman Kodak Co. before returning to Blacksburg as a professor. His collaborative work with such companies as BASF and IBM has resulted in years of support between the private sector and the university.

Long has received more than \$41 million in research funding and is well known recently for research work within the burgeoning sector of materials for additive manufacturing, or 3-D printing. He has more than 40 patents in macromolecular science and engineering, and has published 22 book chapters and more than 220 peer-reviewed publications. He teaches at both the undergraduate and graduate levels, including undergraduate organic chemistry and interdisciplinary courses in the new nanoscience <http://www.science.vt.edu/ais/nano/> degree within the College

of Science, and is dedicated to creating graduate courses that are open and conversational between students and faculty. Among his many awards and honors, Long was selected as one of three Virginia Outstanding scientists for 2015 by Gov. Terry McAuliffe, received the Robert L. Patrick Fellowship Award in 2014, American Chemical Society Cooperative Research Award, and has been inducted as an American Chemical Society Fellow.



Prof. Merola is being honored for outstanding contributions in the area of inorganic and organometallic chemistry and for distinguished service in university teaching and administration.

Among his more recent breakthroughs, Merola was part of a Virginia Tech team to discover a new group of antibiotics believed to target staph infections and the [antibiotic resistant strains](http://www.vtnews.vt.edu/articles/2015/09/091415-fralin-mrsa.html) (<http://www.vtnews.vt.edu/articles/2015/09/091415-fralin-mrsa.html>) commonly known as MRSA, short for methicillin-resistant *Staphylococcus aureus*. Such infections were responsible for nearly 10,000 deaths in the United States in 2013 alone. Millions more are sickened by the bacteria, adding to health care costs and other difficulties. Merola worked on the project through his affiliation with the university's Fralin Life Science Institute.

Since joining Virginia Tech in 1987, Merola has remained a favorite professor among thousands of students. He is highly regarded for bringing innovation to the classroom. He received Virginia Tech's 2013 William E. Wine Award, an honor voted on by students, faculty, and alumni. Additional honors include three college Certificates of Teaching Excellence and the Alumni Award for Teaching Excellence, and a membership in university's Academy of Teaching Excellence.

Joe received his bachelor's degree from Carnegie-Mellon University and his doctorate from the Massachusetts Institute of Technology. Before coming to Virginia Tech, he worked as a senior research chemist for Exxon's Corporate Research and Engineering Co.

# “Hunt, Gather and Heal” — and some polymer chemistry on the side please...

## Alumni Profile: Dr. Jennifer Hoyt Lalli

**Dr. Jennifer Hoyt Lalli** (PhD in polymer chemistry with Prof. Judy Riffle, 2002) will be welcoming her second child (a daughter) with husband Chris in mid-January, which she considers to be something akin to a miracle—for reasons detailed below. Jen Lalli is president of NanoSonic, where she currently directs the design and synthesis for the production of new and innovative low H<sub>2</sub> permeable nanocomposites for zero emission vehicles and space systems. She also oversees NanoSonic’s ventures with new partners and economic growth within Giles County.

Dr. Lalli also has a presence in the online pages of [amazon.com](http://amazon.com) as the author of “*Hunt & Gather: The Healing Powers of Whole Grains, Lean Meat, and Prayer.*” At its core, the 287-page hardbound book is a cookbook, but its original recipes include the



ingredients that helped change her life after Chris first took her hunting. Chris, an avid outdoorsman since childhood, persuaded his wife to join him one October morning in 2009 on a tree stand to wait and hope quietly for a deer to appear. “After my first hunt, I immediately realized that it was the most quiet and serene event I had experienced in years, or possibly ever.” She is now an avid hunter skilled with bow, rifle, and muzzleloader.

Jen’s decision to write the book in December 2012 was linked to a specific goal: her attempts to get pregnant through in vitro fertilization after 10 years of trying to have a child. Doctors had not pinpointed the reason for her apparent infertility, and the quest to get pregnant had taken a toll. She was suffering digestive problems and hoping to find a remedy in nutrition. What started as a simple cookbook was soon transformed into



**Chris and Jennifer Lalli  
with her father-in-law, Lou, and son Tristan**

a spiritual journey. Similar to her doctoral studies, Jen approach the project with focus and determination—even researching the effects of lighting and different lens and shutter speeds and taking hundreds of practice photos of her culinary creations. Jen also recalls waking well before dawn to write, cook and shoot photos. (Ever true to her science roots, the book also includes a chart detailing the thermal conductivity of varied types of cookware.)

Feeling conflicted about another attempt at in vitro fertilization, she instead focused on her work at NanoSonic and the book she envisioned. She said her commitment to the book deepened after she and Chris learned in March 2013 that the second in vitro fertilization had not worked. Nonetheless, her commitment to prayer, faith and

sound nutrition never left her. “The day after I photographed the final recipe for the book [and four days prior to leaving for a Canadian whitetail hunt], we found out that we were pregnant.” Tristan Lalli was born in June 2014 with a full head of red hair. “This year, we found out, again, that we were pregnant 4 days prior to leaving for a Canadian bear hunt.” Tristan will be joined by his sister, Milla, in January 2016.



In a shout-out to Dr. Maggie Bump, Jen notes: “Maggie was my best friend in grad school, and still is. She was one of my inspirations for the book through all of the wonderful Chemistry-Foodie trips we took together—sharing meals and laughs the nights prior to many Adhesion Society talks.” Jen also wanted to point out that she donates 100% of her book sales to charity—currently the Wounded Warriors Project, Project Healing Waters Fly Fishing, and local churches. Contact [www.huntforjoy.com](http://www.huntforjoy.com) for additional info about Dr. Jen Lalli and her “first baby.”

# Giving Back

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Your donations to the **Chemistry Enhancement Fund** are used to support the broader mission of the department, including activities that cannot be supported by state funding. In a nutshell, these activities provide a means for the department to respond to urgent requests for support from faculty; from students to support their research and scholarship, travel, outreach activities; and more. Charitable gifts also help fund the "niceties" that lead to an intellectually stimulating and collegial environment for faculty, staff, and students.

We are proud that our department has been recognized as a *University Exemplary Department* (2009, 2014)—and with your help we can continue to offer an outstanding educational experience to the next generation of students.

If you have had a good experience in the Department of Chemistry and would like to give something back to help, please consider donating. Even the smallest of gifts make a huge difference in our ability to support our outstanding faculty and students.

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University Gateway Center, Virginia Tech  
902 Prices Fork Road  
Blacksburg, VA 24061

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For more information about donating to the Department of Chemistry, please contact Jenny Orzolek, director of development for the College of Science, at 540-231-5643 or [jorzolek@vt.edu](mailto:jorzolek@vt.edu).

**We thank you for your support!**

**Department of Chemistry**

**480 Davidson Hall**

**Virginia Tech**

**Blacksburg, VA 24061**



**At the Fall Faculty Retreat at Chateau Morrisette: Paul Carlier, Kurt Neidigh, Lou Madsen, Nick Mayhall, Vicki Long, Tim Long, Paul Deck, David Kingston, Jatinder Josan, Alan Esker, Greg Liu, John Morris, Tijana Grove, Maggie Bump, Amanda Morris, Brian Tissue**