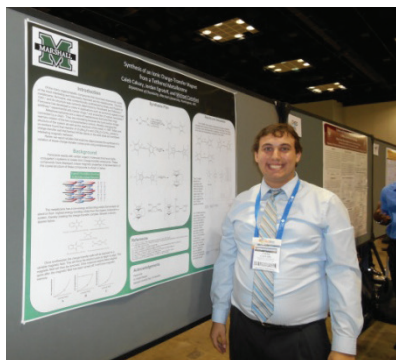


MU Chemistry

year-in-review

Spring 2014

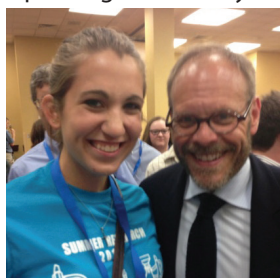
Faculty and Students Present at the ACS National Meeting



The Department was well represented at the 246th National Meeting and Exposition of the American Chemical Society in Indianapolis, held in September 2013. Undergraduate students Caleb Calvary (senior, BS

Chemistry), Hannah Bott (senior ACS Chemistry major), Emily Wright (junior BS Chemistry), Brian Warner (junior BS Chemistry), Christian Warner (senior BS Chemistry) and graduate student Emma Gardner presented posters on their research conducted in departmental laboratories. Chemistry professors Gary Anderson, [Scott Day](#), [Bill Price](#), [Laura McCunn](#), and [Mike Norton](#) also attended the conference.

The group began their trip with a visit to the Indianapolis Zoo. The students spent an afternoon at the Indianapolis Motor Speedway and met the ACS mascot, the mole. Chris Warner was brave enough to take a spin as a passenger in an Indy car. A highlight of the conference



was a special presentation by Food Network star Alton Brown. (pictured with student Emily Wright) He combined science and his trademark humor to dispel common myths about cooking. All of the students viewed the trip as a valuable experience, especially being able

to share their hard work with other chemists. The activities developed by ACS specifically designed for undergraduates were also of particular significance to the students.

This was the second year in a row that the department has sponsored group attendance at a national meeting. The previous trip was to the ACS meeting in Philadelphia. Our next major trip will be to Pittsburgh for the Central Regional Meeting of ACS in October 2014.



ACS meeting in Philadelphia

Dan Babb Retires!

Dan Babb is retiring after 42 years of teaching, research, and service at Marshall University. How many students he has taught or encountered through advising and other activities is hard to determine, but 15,000 might be a conservative guess. His research involved using elemental fluorine at times; remarkably, he managed to avoid losing any body parts!



Dan always tended to be among the most popular instructors in the introductory courses and willingly accepted room-filling enrollments, even during the times he held administrative posts. His rapport with students extended beyond the classroom: some will recall the early years when there were fewer restrictions on social activities, the days of the Lead Sled and picnics at Lake Vesuvius.

Dan became Associate Dean of the College of Science in 1986, then in 1990 ascended to Chair of the Department for 14 years. Other significant activities include service on the committee that developed the original curriculum for the Society of Yeager Scholars and as chair of the steering committee for the Society, service on the committee that established the Faculty Senate and thereafter on the Senate itself, and service on the Athletic and Student Conduct & Welfare Committees of the Faculty Senate.

Dan led the effort to re-charter and re-colonize Alpha Sigma Phi ($\text{A}\Sigma\Phi$) on this campus in 1980 and served the fraternity as faculty advisor for many years. He later established the Paul and Catherine Babb Scholarship, awarded annually based on academic merit to a student majoring in chemistry.

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Dan's impact on the Department and the University has been large, and his legacy will go on in perpetuity. We wish him well in his golden years.

Larry Schmitz wins Marshall's Distinguished Service Award



From his early years at Marshall, Larry has served on many important university committees and held leadership positions on several. While still an assistant professor, Larry became secretary of the university's Academic

Planning Committee and its chair the following year. This is the university committee responsible for vetting all new university academic programs including the creation of the *College of Information Technology and Engineering*. As an associate professor he was secretary, then chair of the local section of the *American Chemical Society*. As a full professor, Larry has been elected to serve on the Faculty Senate, Distinguished Artists and Scholars Committee, ad hoc Merit Pay Review Committee, ad hoc Promotion and Tenure Committee, and served six years on the College's Personnel Committee, half of them as its chair. He also was the Department's representative on the committee that selected Andrew Rogerson as our Dean several years ago.

Student and Faculty Accomplishments



Courtney Hatten (BS, Chemistry 2013) presented her research with Laura McCunn to members of the US Congress at the Council on Undergraduate Research's *Posters on the Hill* event,

which showcases students from around America to build support for this high-impact educational practice. Courtney met with Shelley Moore Capito (R, WV-2) and members of the staff from Rep. Rahall's and Sen. Rockefeller's offices. She also met with the president of the *American Chemical Society*, Marinda Wu, and other invitees. Courtney was the only West Virginian accepted to last year's event.

Eight students co-authored research publications with faculty: Rebecca Lycans (MS Chemistry 2012), Catherine Higgins (BS Chemistry 2013), Michael Tanner (BS, Biomedical Science) reported with Scott Day and Eric Blough (School of Pharmacy) a low-cost method for creating flow cells that support molecular motor studies in *Colloids and Surfaces B: Biointerfaces*. Courtney Hatten,

Kevin Kaskey (BS Chemistry 2012), Brian Warner, and Emily Wright's research with Laura McCunn was published in the *Journal of Chemical Physics*. Their work examined the pyrolysis of butyraldehyde as part of an attempt to better understand combustion reactions. Finally, Derek Fry (B.A. Secondary Education in Chemistry) and [Ken O'Connor](#) reported a new organic laboratory experiment in the *Chemical Educator*. The hydrogenation experiment is innovative because no solvent is used, which greatly cuts down on the production of waste.

Ken had another paper in the *Chemical Educator* on that same hydrogenation reaction, but this time developing a monitoring system for it using thin layer chromatography. Leslie Frost had two additional papers; one a collaboration with Menashi Cohenford of the Department of Integrated Science and Technology and the other a collaboration with Monica Valentovic and John Wilkinson IV of the School of Medicine's biomedical sciences program. These studies examine the role of anti-oxidants in reducing the level of reactive oxidant species in cells because they have been associated with many disorders such as diabetes, heart disease, and neurodegenerative disease. Finally, [Mike Castellani](#) had a chapter "Presentation of Results: Publications and Oral and Poster Presentations" published in the booklet "How to Get Started in STEM Research with Undergraduates" which is a guide to new faculty in the natural sciences.

In addition to the Fall ACS national meeting, Prof. Laura McCunn presented a talk on her pyrolysis studies of organic compounds, co-authored by undergraduates Courtney Hatten, Brian Warner, Emily Wright, and Kevin Kaskey, at the 68th International Symposium on Molecular Spectroscopy. Bin Wang and Bill Price presented posters on their research at the Spring ACS meeting in New Orleans. Marshall students Christopher Means (senior physics major), Irfan Khan (MS graduate student), and Colton Koontz (BS Biochemistry 2012) worked with Bin on this project investigating microfluidic devices (today's glucose monitors are microfluidic devices), while Hannah Bott was a contributor to Bill's computation research on dendrimers. Benjamin Blodgett (BS Chemistry, 2011) and James Board (MS 2013) coauthored two presentations made by Derrick Kolling, the first at the 39th Midwest/Southeast Photosynthesis Meeting and the second at 2013 Scialog, which is a prestigious invitation only national conference. James also coauthored a presentation with Derrick at the 16th International Congress on Photosynthesis.

Tanner Bakhshi (Norton), Caleb Calvary (Castellani), Derek Collins (Frost), Courtney Hatten (McCunn), Rebecca Holliday (Day), Christopher Means (Wang), Tabitha Norman (Cohenford-IST), Alisa Osborne (Day), Anthony Stephenson (Kolling), Matthew Thompson (Kolling), Brian Warner (McCunn), and Emily Wright (McCunn) presented their research in poster format at the Marshall Chapter of Sigma Xi's 23rd Annual Research Day. Chemistry majors did very well in the undergraduate poster presentation category

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with Derek Collins placing first, Sumaiya Chaudhry tied for second, and Anthony Stephenson and Courtney Hatten tied for third place. Tanner Bakhshi (Biomedical Sciences major) tied for second.

Zachary Hunter (BS Chemistry, 2013) won the 2013 Cam Henderson Award, which was presented at the Marshall University Alumni Association's 76th annual Alumni Awards Banquet. It is given yearly to the student athlete who best exemplifies the spirit of scholarship while participating in athletics.

We've always known that Ken O'Connor is a wonderful and innovative teacher. We received external confirmation when he was selected as one of three finalists for the *Marshall & Shirley Reynolds Outstanding Teacher Award*, Marshall's most important teaching recognition. There is an exhaustive selection process which involves nomination and reference letters, a meeting of the whole department with the evaluation committee, candidate interviews with the evaluation committee, and extensive in-class observations. We're all quite proud to have him as a member of our Department. He joins Bill Price as our second Reynolds finalist.

Finally, Hannah Bott (Price), Sumaiya Chaudhry (Zill, BMS program), Brian Warner (McCunn), and Christian Warner (Day) were selected to participate in Marshall's SURE program. The Summer Undergraduate Research Experience program provides a stipend to students working in faculty research labs for 10 weeks each summer. Chemistry majors Drew Vess (Frost), Heath Blankenship (Valluri, Biology), Rebecca Brown (Valentovic, Pharmacology), Sumaiya Chaudhry (Zill), and Karl Shaver (Valentovic, Pharmacology) received NASA WV Space Grant Consortium Undergraduate Fellowships. These fellowships provided the students with a stipend to work on a science related research project throughout the academic year. Zach Hunter received a NASA Undergraduate Research Fellowship which provided him with a \$4500 stipend to support his research project under the supervision of Scott Day.

Major Equipment and Classroom Improvements



We are dedicated to providing our students with access to state-of-the-art instrumentation and equipment. This past year, we were able to purchase two new major instruments (a Bruker EPR and a Shimadzu High Performance Liquid

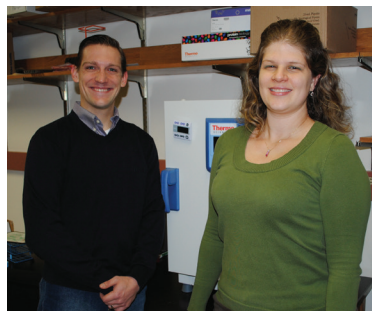
Chromatography system (HPLC)) and obtain a major upgrade to one of our classrooms.

The Prominence HPLC is a network-ready HPLC system that meets the demands of today's advanced users. In addition, this HPLC can be coupled to one of our existing mass spectrometers for high-sensitivity analysis with LC-MS. Students will gain experience using the HPLC system in both analytical and organic laboratory courses, as well as during their Capstone research experience.

The Bruker EMXplus, an electron paramagnetic resonance spectrometer has arrived. Funds for the instrument were awarded to Derrick Kolling, Mike Castellani, and Mike Norton, along with Nalini Santanam (Pharmacology, Physiology, and Toxicology), Xiaoping Sun (Chemistry at University of Charleston), Maria Babiuc-Hamilton (Physics), and Judy Fan (Physics) through a Major Research Instrument NSF grant. The instrument is capable of measuring samples with unpaired electron spins (including integer spin systems) over a large temperature range 3.2–298 K. Results have already been obtained and the instrument has been used in several teaching labs.

Last year, the University upgraded one of the Department's two main classrooms as part of its Technology Enhanced Classroom Initiative (TECI). Chemistry was able to negotiate a special design for our classroom which includes two different large, wall-mounted computer monitors, a front projection screen, speakers, and Smart computer monitor. This configuration allows instructors to show one kind of content on the wall monitors while showing different content on the front monitor or writing on the whiteboard. The new Smart computer monitor allows faculty to write on whatever is projected onto the screen with a pen, then save and email it to students. We can also record faculty members doing lectures and post the videos online for students to view later. It's the most advanced and versatile classroom on campus.

Rosalynn Quiñones and John Rakus Join the Department



Two new faculty members joined the Department in the fall: [Rosalynn Quiñones](#) and [John F. Rakus](#). Rosalynn is a native of Caguas, Puerto Rico and is an industrial chemistry graduate of Universidad de

Puerto Rico at Humacao. She earned a doctorate in analytical chemistry from Duquesne University and was a post-doctoral fellow at the University of Michigan and Washington and Jefferson College, the latter through a National Science Foundation program intended to train individuals for faculty positions at predominantly undergraduate institutions. Currently, she is also a Faculty

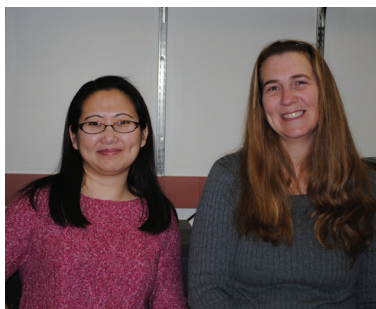
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in Residence at Holderby Hall, Buskirk Hall and Twin Towers West. Her research interests focus on the study of the modification of nanoparticles for use in solar cells to improve the device performance. She comes to Huntington with her husband José and children José and Diana.

John is a native of Livonia, New York, and is a biochemistry graduate from the University of Richmond. He holds a doctorate in biochemistry from the University of Illinois at Urbana-Champaign, has post-doctoral experience from New York University and was a visiting faculty member at Fort Lewis College. His research focuses on unusual protein modifications involved in the activation of the immune response. The specific projects examine the mechanisms of enzyme-catalyzed glycosidic bond formation and the role of C-mannosyltryptophan in immunological signaling pathways. He comes to Huntington with his wife Jessica, son Alec and is expecting a daughter in June. In his spare time, John is an avid runner, fisherman, enjoys pre-Civil War American history, and is desperately working to renovate his Southside home.

Bin Wang and Leslie Frost Promotions



In addition to adding two new members to the faculty, [Bin Wang](#) was tenured and promoted to Associate Professor, while [Leslie Frost](#) was promoted to the rank of full professor. In the Department's recommendation, both

were commended for being fine instructors both in class and as mentors to students on individual research projects. Bin has been an excellent departmental citizen having served on both our graduate and undergraduate academic committees as well as serving on our faculty Senate and being secretary for the local American Chemical Society section. Leslie chairs our Equipment and Space committees has been the long-time treasurer for our ACS section, and saves us thousands of dollars annually through maintaining much of our instrumentation. Both have a history of mentoring large numbers of students in their research labs, particularly undergraduate students. Between them, they published 11 papers over the past few years, with 9 student co-authors and 16 presentations with 18 student co-authors (many of the students were presenters).

Alpha Chi Sigma Update

Alpha Chi Sigma, a co-ed chemistry professional fraternity, draws its membership from chemists and those in allied sciences. The Marshall University chapter (Gamma Eta) was incorporated in 1985 under the direction of Prof. Gary Anderson and succeeded the ACS student affiliates chapter. The fraternity inducted eleven new members last semester, and currently has eight pledges this semester. This year the group performed chemical demonstrations for school groups, hands-on chemistry activities with elementary and middle school students, judged local science fairs, and volunteered at the local soup kitchen at the Johnson Memorial United Methodist Church. An Alumni Gala was held on February 22 to honor the graduated members of Alpha Chi Sigma. A district conclave will be held April 4-6 which will bring together universities within the district including Virginia Tech, University of Virginia, and James Madison University. The fraternity has a website that is linked off the main Department of Chemistry website under professional societies and we'll be posting monthly updates from AXΣ on our news page.

Transitions

Karl Shanholtzer, our laboratory manager for 40 years retired in June. Karl came to Marshall from Prieser Scientific and was an invaluable member of the Department. Karl had an unparalleled talent for keeping our instrumentation and computers running without relying on equipment manufacturers for technical support. He was also an extraordinary manager of funds for Chemistry. We are pleased that Darwin McCunn joined the Department in November as our new laboratory manager. He has a degree in Chemistry (B.S. Indiana University of Pennsylvania) and wealth of experience in chemical industry for companies such as ICI (Glidden Paint) and Ethyl Petroleum Additives. One of his many responsibilities is maintaining the Chemistry [newspage](#), which we hope you visit regularly.

For more details about any stories in this newsletter, please visit our News page at www.marshall.edu/chemistry/news.asp.

Our Vision

To be known as one of the top undergraduate and MS programs in the nation by integrating teaching with research experience.



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