GRAND VALLEY STATE UNIVERSITY
DEPARTMENT OF CHEMISTRY

Chemistry Department Newsletter

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SOME FEATURES IN IN THIS ISSUE:

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A Word from the Chair

This past March, the department submitted a group of proposals to the College Curriculum Committee that will change our curriculum for the Bachelor's degree in Chemistry substantially, and make smaller changes to the curricula aimed at students with interests in biochemistry or secondary education. The department has been discussing and planning for these changes for several years.

The main goals for the curriculum redesign were to increase flexibility for students, to reduce the likelihood of canceled courses that made it harder for students to graduate, and to widen the options students had to meet the University's Supplemental Writing Skills requirements. In addition, the 115/116 general chemistry sequence has recently been reduced by one credit, and some material, important for chemistry majors but possibly not for other students in that sequence, needed to find a new home in the chemistry curriculum.

The main changes are these:

- The department will offer degrees in Chemistry, in Biochemistry, and in Chemistry with Education Emphasis. Two emphases that consistently served low numbers of students, the Environmental and Technical emphases, are being eliminated. The subject material from those emphases will still be available in the curriculum as electives.

- A new sophomore-level inorganic course will cover molecular orbital theory, coordination chemistry, elementary electrochemistry, and some material imported from CHM 471, Advanced Inorganic Chemistry. 471 itself will become an elective; it will continue to treat group theory and will include additional advanced material from inorganic and organometallic chemistry. The former Organometallics course will go away.

- The sophomore analytical sequence will begin with CHM 221, Survey of Analytical Chemistry, followed by a revised instrumental analysis course that blends material from the former Instrumental Analysis I and II and satisfies SWS requirements.

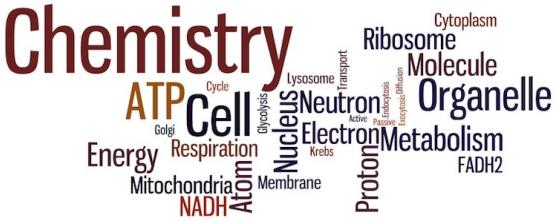
- Material from the current lecture courses in green, environmental, and polymer chemistry will be blended into two new elective courses, one covering environmental and green chemistry and the other polymer chemistry and industrial processes.

- The upper-level labs will be substantially revised. All students will be required to complete the traditional two semesters of organic lab, Survey of Analytical Chemistry, and Survey of Physical Chemistry lab CHM 352 (which remains SWS and will now meet every week). Beyond that, students will be able to choose among five advanced lab courses: biochemistry (now SWS), organic synthesis and characterization, inorganic synthesis and characterization, environmental and green chemistry, and physical and instrumental lab. Each of these lab courses will run at least once every year.

The program requirements for the Chemistry degree will be simpler than before. Beyond a list of required courses, students will simply need to select at least three upper-level electives, and they can choose those courses to match their own interests and career plans. Some choices of electives will result in chemistry degrees certified to meet American Chemical Society standard.

We are confident that this new curriculum will serve students well. It retains or improves the depth of coverage of most topics while giving students more flexibility and easier scheduling. We expect to have the new curriculum in place in Fall 2016. Students enrolled before that time will be able to graduate using either the new or old program requirements as they choose.

We are grateful to the members of the department's Curriculum Committee over the past several years, and to all the faculty and staff who provided feedback, made suggestions, and drafted course proposals and syllabi. At the spring meeting of the College of Liberal Arts and Sciences, the chair of the College's Curriculum Committee described the quality of Chemistry's proposal as "unprecedented". We hope the students and employers develop a similar opinion!



Beating the Odds and Success Through a Non-traditional Path:

The Story of Katherine Coburn, Outstanding Graduating Chemistry Senior

Graduating from high school and opting not to go to college right away but rather get a job as a full time hairdresser is certainly not the ideal path for someone aspiring to attend medical school. But Katherine Coburn, 2015 Outstanding Chemistry Graduating Senior, is living proof that it is possible to take a non-traditional path to college and still be successful. Katherine Coburn graduated from high school, worked for a couple of years as a full time hairdresser, got married, attended a Community College, and transferred to GVSU, where she graduated with a double major in Chemistry and Biomedical Sciences. In Chemistry, Katherine was the Outstanding Graduating Chemistry Senior and in Biomedical Sciences she was a Distinguished Graduating Senior.

Katherine said she first became interested in science while working as a hairdresser. To further explore this interest, she enrolled at GRCC where she took classes. Through funded research collaboration between Dr. Tom Niles of GRCC and Dr. Shannon Biros of GVSU, Katherine got introduced to chemistry research, which helped reinforce her interest in chemistry and science.

"As a hairdresser, I was doing chemistry on a daily basis; chemistry is central to how shampoo works, how colors are mixed and how perming is done," she said.

When asked what her biggest regret was, if any, for the choice she made not to go to college right after graduating from high school, Katherine said she had no regrets. "Coming from an upper middle class family, I did not take things as seriously as I should because it seems things were always handed to me."

Katherine said her greatest benefit from the experience she had was the level of maturity she attained and knowing how to work with people. She also learned how to appreciate life more and not take things for granted.

"After graduating from high school, I was not sure of what I wanted in life," she said. "I was a rebellious child in high school but did not do drugs. I listened to music that was not popular and dressed like a "punk rock kid". In my job as a hairdresser, I had a bad boss that was not nice to people but learned from that experience to be nicer to people and motivated to work hard to be successful. Realizing how hard it was to make it with an hourly job and with limited resources helped me to appreciate the reality of life. I learned to be more responsible and realistic."

Katherine said the thoughts of her parents were mixed in her decision to seek a job as a hairdresser rather than go to college.

"My parents were surprised at my decision not to attend college right after high school, but they supported me because they wanted me to carve out a path for myself," she said. "They were supportive but shocked; they were equally shocked when I quit my job and went to college."

Katherine's experience at GRCC prepared her for the high expectations and rigor at GVSU.

"In my Humanities classes, I did not feel like I fit in," she said. "In my Honors general chemistry class, there was a good group of students that hung out together and would get together for donuts before Wednesday labs at 7:45 am. Students in the group were motivated to go to a 4-year college. The group dynamics was not all work without play. The group worked hard and helped each other stay motivated."

In the winter of 2013, Katherine did research with Dr. Tom Niles of GRCC. Research collaboration between Dr. Niles and Dr. Biros facilitated the transition from GRCC to GVSU. Dr. Niles introduced Katherine to Dr. Biros, which resulted in Katherine doing research with Dr. Biros in the spring/summer of 2013 at GVSU. That fall of 2013, Katherine was admitted to GVSU as a chemistry major. She would later choose a second major in biomedical sciences.

I asked Katherine how she was able to balance her schoolwork with her personal life given that she has a husband. She shared with me her experience.

"I had to be very organized," she said. "I had a planner where I wrote down all deadlines when things were due. I had a list of objectives that I made first thing in the morning what things had to get done and in what order. I treated school as a job; I made sure all schoolwork was done at school so that the time at home was for my husband, family and friends. It is also important to remember that as a person you need some time off and some time for yourself. I tried to live a balanced and healthy life: I would exercise regularly and took a couple of times a week to do something fun for myself."

I asked Katherine for what she would consider her 7 top "recipe for success" for current and future chemistry majors and this is what she shared with me:

1. "Be authentic and honest"
2. "Get to know your Professors and fellow students"
3. "Seek out resources"
4. "Take advantage of tutoring/office hours"
5. "Do not be afraid"
6. "You are not alone"
7. "Get involved in research"

A Reflection of 10 Years At the Helm of the Chemistry Department Newsletter:

Felix Ngassa, Editor-in-Chief, 2005-2015

Dr. Felix Ngassa

Ten years ago, veteran Chemistry Educator, Dave Tanis passed over the mantle of Editor-in-Chief of the Chemistry Department Newsletter to Felix Ngassa, a junior faculty member at the time. In the fall of 2005, the Chemistry Department Newsletter said thank you and farewell to its former Editor-in-Chief, Dave Tanis and welcomed Felix Ngassa as the new Editor-in-Chief. Now after ten years of being at the helm of the Chemistry Department Newsletter, this special 10 years anniversary edition provides an opportunity to reflect upon the Newsletter's accomplishments to date and to look towards the future.

It all started with the Editor-in-Chief being in charge of all aspects of the newsletter; the editorial work of writing, editing and the layout aspect. Three years later, Jennifer Glaab took over the role of designing and layout. When the Chemistry Department reorganized its leadership structure by forming committees, the Communications Committee became responsible for publishing the newsletter. Therefore, in the last two years, the role of getting the articles together for the newsletter has been shared by members of the Chemistry Department Communications Committee, with Felix Ngassa still serving as the Editor-in-Chief and Jennifer Glaab as the design and layout expert.

This will be my last year as the Editor-in-Chief of the Chemistry Department Newsletter as I have taken new leadership roles at the University; these roles involve many new commitments, combined with a range of academic and professional responsibilities. I am the new Vice Chair of the Executive Committee of the University Academic Senate, the Chair of the New Programs Council and the Chair of the GVSU Public Safety Liaison Committee.

Under my leadership, the breath of content and its relevance in showcasing our department's accomplishments and the success of our alumni has taken the newsletter to a new level of excellence that is unparalleled. This is the vision I had for the newsletter 10 years ago when I was handed the Editor-in-Chief position. As I exit the stage, I hope future editors continue to embrace and extend upon the vision that I had for the newsletter. In the future, I am confident the newsletter will be well served by the Communications Committee and the new Editor-in-Chief. I am excited and looking forward to the new vision and steer that the new Editor-in-Chief will bring to the newsletter.

The scope of the newsletter has already changed in some important ways over the past decade, largely in response to the change in the size and structure of our department. As we consider the future of our newsletter, it seems important and timely to remind our faculty colleagues, alumni and friends of our scope and objectives, especially in light of the fact that a good quality newsletter is only possible if faculty, alumni and friends update us with news in a timely manner. As always, we welcome news items, suggestions, and requests from you, our alumni, faculty and friends. Confucius said, "Choose a job you love, and you will never have to work a day in your life." That is how I look at my career here at GVSU as an educator.

GVSU's Target Inquiry Graduate Named 2015 High School Science Teacher of the Year: Deanna Cullen

The Board of the Michigan Science Teachers Association selected Deanna Cullen as the 2015 High School Science Teacher of the Year. Deanna is a graduate of the NSF funded Target Inquiry program at GVSU, a program designed to meet the professional development needs of middle and high school science teachers for developing an inquiry-based science classroom. Deanna was chosen for using and modeling best practices, inspiring students, demonstrating innovative teaching strategies, being an excellent role model for students and other teachers, demonstrating leadership, and exhibiting a passion for science and for teaching.

Arnold C. Ott Lectureship in Chemistry for 2014-2015 School Year

The Ott Lectureship remains a Grand Valley Chemistry Department tradition that honors the legacy of Dr. Arnold Ott, who was one of the co-founders of Grand Valley and served on the Board of Trustees for almost three decades. The Ott Lectureship was created and endowed by a gift from Arnold C. Ott and Marion Ott. Our Ott Lecturers, for the 2014-2015 school year, were Professors Jeffrey Moore, and Wilson Ho.

Prof. Moore received his B.S. in chemistry (1984) and Ph.D. in Materials Science and Engineering with Samuel Stupp (1989), both from the University of Illinois. He then went to Caltech as an NSF postdoctoral fellow working with Robert Grubbs. In 1990, he joined the faculty at the University of Michigan in Ann Arbor and then in 1993 returned to UIUC where he is currently the Murchison-Mallory Chair in the Department of Chemistry.

Two lectures were scheduled on October 16 and 17 at the Grand River Room and the Pere Marquette Room of the Kirkhof Center on the Allendale campus. The evening lecture on Thursday, October 16, at the Grand River Room, was titled "Self -Healing Polymers". The afternoon lecture on Friday, October 17, at the Pere Marquette Room, was titled "Polymer Mechanochemistry and the Concept of the Mechanophore".

Prof. Moore is a Fellow of the American Academy of Arts & Sciences and the American Chemical Society; he received the Campus Award for Excellence in Undergraduate Teaching and has been recognized as a "Faculty Ranked Excellent by their Students". For 14 years he served as an Associate Editor for the *Journal of American Chemical Society.* He has published over 300 articles covering topics from technology in the classroom to self-healing polymers, mechanoresponsive materials and shape-persistent macrocycles.

Prof. Wilson Ho received his B.S. and M.S. degrees in chemistry from the California Institute of Technology in 1975, and his Ph.D. in physics from the University of Pennsylvania in 1979. He spent a year as a member of the technical staff at the AT&T Bell Laboratories and was on the faculty at Cornell University prior to joining the University of California, Irvine in 2000 as Donald Bren Professor of Physics & Astronomy and of Chemistry. His research has been guided by the development of new instrumentation and experimental procedures for probing molecules by adsorbing them on solid surfaces. He discovered impact scattering and a new selection rule for high-resolution electron energy loss spectroscopy (EELS) of vibrations of adsorbed molecules.

Two lectures were scheduled on Thursday, April 16 and Friday, April 17, at the Robert C. Pew Grand Rapids campus and Allendale campus, respectively. The evening lecture on Thursday, April 16, at the Loosemore Auditorium, was titled "Visualization of Chemistry: Seeing is Believing". The afternoon lecture on Friday, April 17, at the Pere Marquette Room, was titled "Bond, Chemical Bond".

Prof. Ho has published 270 papers and some of the results have appeared in textbooks, such as the images of the particle-in-a-box states. His work has been recognized by Fellowships in the American Physical Society and the American Association for the Advancement of Science, the Bonner Chemistry Prize, the Alexander von Humboldt Research Award for Senior US Scientists, the Medard Welch Award of the American Vacuum Society, the Irving Langmuir Prize of the American Physical Society, Membership in the U.S. National Academy of Sciences, and Academician of Academia Sinica, Republic of China.

Professor Jeffrey Moore

Professor Wilson Ho

Chemistry Faculty Receives External Grant to Fund Research

Richard Lord Awarded Cottrell College Science Award

Dr. Richard Lord received a Cottrell College Science Award for 2015. These grants, overseen by the Research Corporation for Science Advancement (RCSA), are reserved for innovative research projects proposed by early career scientists at American colleges and universities. The awards cover a wide range of research in astronomy, chemistry, and physics. Dr. Lord's project, *Towards a Chemical Rationale for Redox-Induced Electron Transfer,* was one of only 48 awards given in 2015.

Department Faculty News

John Bender is recovering very well following his bicycle injury on May 1st 2015. John writes, "the physical recovery has been very rapid, and further monitoring indicates I have not suffered any neurological damage due to the multiple head traumas. I work steadily at recovering my normal workout and dieting schedule, and am already fully functional in the lab with my CHM 499 students this summer. Unfortunately, the legal issues surrounding my injury may remain (indefinitely) unresolved, due to the fact that my bicycle was not recovered by the police and 'disappeared'..."

Julie Henderleiter was on sabbatical during the 2014-2015 school year. She worked with Otsego Public School teachers to streamline their elementary science program and helped develop an 8th grade science curriculum. She accepted the opportunity to teach science to a split 3rd/4th grade classroom at one of the elementary schools in Otsego. Her experiences have led to several new lesson plans submitted to PhET and novel lessons for motion and weather. She is excited to bring new ideas back to the science courses taken by preservice elementary teachers.

Mary Karpen coauthored a paper with collaborator Dr. Pieter deHaseth of Case Western Reserve University, on modeling bacterial RNA polymerases. The paper, titled *"Base Flipping in Open Complex Formation at Bacterial Promoters,"* is published in *Biomolecules*, 5(2):668-678 (2015).

Andrew Lantz was the beneficiary of two external grants from the DOE and NSF: (1) Lantz, A. (Principal), Smart, R. (Supporting), Schroeder, W. (Supporting), Schroeder, J. (Supporting), Boezart, A. (Supporting), "A Single Substance Organic Redox Flow Battery", Sponsored by Department of Energy as Subcontract through Vinazene Corp., $118,896.00, Funded. (sub: November 21, 2013, start: November 27, 2013, end: April 2015); and (2) Rassmussen, P. (Co-Principal), Lantz, A. (Co-Principal), Schroeder, W. (Supporting), "High Energy Density Non-aqueous Pseudocapacitors," Sponsored by National Science Foundation, Federal, $225,000.00. ($67,892 for GVSU). (January 1, 2015 - December 31, 2015).

Dave Leonard had a grant of $400,000 renewed for 3 years from the National Institute for Allergy and Infectious Diseases. The title of the grant is, "Biochemical and structural analysis of emerging resistance threats in *Acinetobacter baumannii*". In addition, Dave and undergraduate research student Joshua Mitchell published a paper, *"Common clinical substitutions enhance the carbapenemase activity of OXA-51-like class D β-lactamases from Acinetobacter spp."* published in *Antimicrobial Agents and Chemotherapy*, 58, 7015-7016 (2014).

Dave Leonard and **Rachel Powers** coauthored a paper, along with co-authors Joshua M. Mitchell, Jozlyn R. Clasman, Cynthia M. June, Kip-Chumba J. Kaitany, James R. LaFleur, Magdalena A. Taracila, Neil V. Klinger, Robert A. Bonomo, Troy Wymore, and Agnieszka Szarecka. The paper, titled *"The structural basis of activity against aztreonam and extended spectrum cephalosporins for two carbapenem-hydrolyzing class D β-lactamases from Acinetobacter baumannii."* is published in *Biochemistry*, 54:1976-1987 (2015).

David Leonard and **Laurie Witucki** coauthored a paper, along with co-authors Cynthia M. June, Robert M. Vaughan, Lucas S. Ulberg, and Robert A. Bonomo. The paper, titled *"A fluorescent carbapenem for structure function studies of penicillin-binding proteins, β-lactamases and β-lactam sensors," is published in Analytical Biochemistry*, 463, pp 70-74 (2014).

Richard Lord and collaborators published seven papers: *"In Search of Redox Non-Innocence Between a Tetrazine Pincer Ligand and Monovalent Copper,"* published in *Dalton Trans., 43*, 7968-7963 (2014); *"Switching the Enantioselectivity in Catalytic [4 + 1] Cycloadditions By Changing the Metal Center: Principles of Inverting the Stereochemical Preference of an Asymmetric Catalysis Revealed by DFT Calculations," published in J. Am. Chem. Soc., 136*, 9414-9423 (2014); *"A DFT and Spectroscopic Study of Intramolecular Quenching of Metal-to-Ligand Charge-Transfer Excited States in Some Mono-Bipyridine Ruthenium(II) Complexes, "* published in *Can. J. Chem.,* 92(10): 996-1009 (2014); *"[(Salcen)CrIII + Lewis base]-catalyzed synthesis of N-aryl-substituted oxazolidinones from epoxides and aryl isocyanates,"* published in. *Chem. Commun, 50*, 15187-15190 (2014); *"The aldimine effect in bis(imino)pyridine complexes: non-planar nickel(I) complexes of a bis (aldimino)pyridine ligand,"* published in *Chem. Commun. 51*, 6496-6499 (2015); *"Energy Dependence of the Ruthenium(II)-Bipyridine Metal-to-Ligand-Charge-Transfer Excited State Radiative Lifetimes: Effects of ππ*(bipyridine) Mixing*," published in *J. Phys. Chem. B , 119*, 7393-7406 (2015); *"Reactivity Modes of an Iron Bis(alkoxide) Complex with Aryl Azides: Catalytic Nitrene Coupling vs. Formation of Iron(III) Imido Dimers*," published in *Organometallics*, *34*, 2917-2923 (2015).

Rachel Powers and **Brad Wallar** coauthored a paper, along with GVSU students **Hollister Swanson** and **Nick Florek** and collaborator Robert Bonomo from Cleveland VAMC and Case Western Reserve University. The paper, titled *"Biochemical and structural analysis of inhibitors targeting the ADC-7 cephalosporinase of Acinetobacter baumannii*" is published in *Biochemistry,* 53(48), pp 7670-9 (2014).

Thomas Pentecost earned tenure and was promoted to Associate Professor.

Scott Thorgaard was awarded an internal grant in winter 2015, the Catalyst Award, from the Center for Scholarly and Creative Excellence at GVSU.

Brad Wallar was promoted to Full Professor.

Randy Winchester was awarded the NMR Wizard certificate by the class of 2015.

Laurie Witucki was promoted to Full Professor

Chemistry Department Honors Students

In April of 2015, the chemistry department honored many of its most outstanding students for the 2014/2015 academic year. A total of twenty-eight awards in various categories were given. The award winners in the different categories were the following.

General Chemistry Award: The general chemistry awards recognize students who show excellence in general chemistry. Every instructor who teaches CHM 115 and CHM 116 (both fall/winter sections) during the academic year has the opportunity to nominate three students per section for this award. The Scholarship and Development Committee chooses any students whose names appear on both the CHM 115 list and the CHM 116 list and give awards to those students. Names submitted from winter CHM 115 are used with the following fall CHM 116 courses. The award winners were, *Daniel Anya, Corey Gras, Jared Noorman, Shannon Quinn, Chad Tietsma, Daniel Tjapkes,* and *Michelle Ziegelbaur.*

Organic Chemistry Award: This award recognizes the top students from the CHM 241/242 sequence. Instructors teaching CHM 241 and CHM 242 (both fall and winter) during the academic year have the opportunity to nominate up to two (2) students per section for this award. The Scholarship and Development Committee chooses any students whose names appear on both the CHM 241 and CHM 242 lists. Names submitted from winter CHM 241 are used with the following fall CHM 242 courses. The award winners were, *Joel Francis, Timothy Holloway, Jennifer Jess, Jennifer Lee, Elizabeth Ritchie, Ashley Robinson, Emma Schroder, Kali Smolen,* and *Elizabeth Witte.*

Organic Chemist Award (ACS Poly-Ed Award): The recipient of this award was *Dayne Martinez*. This award recognizes a student that excels in the majors organic chemistry sequence (CHM 245/246/247/248). The student must be a declared chemistry major and has completed the CHM 245-248 sequence by the end of the academic year. The instructors for these courses select the student.

Analytical Chemist Award: *April Kaneshiro* was the recipient of this award, which is given to a declared chemistry major that is outstanding in CHM 222 and CHM 225. The student must have completed CHM 225 by the end of the current academic year. The analytical Chemistry faculty selects the awardee from the best students meeting the above criteria based upon chemistry GPA.

ACS Division of Inorganic Chemistry Award: *Michael Esch* was the recipient of this award, which is given to a chemistry major that has excelled in CHM 471. In the event that more than one student has been identified, performance in CHM 372 is also considered. The Inorganic Chemistry faculty selects the awardee based on the above criteria.

Physical Chemist Award: *Catlin Schalk* was the recipient of this award, which recognizes a student who has shown excellence in physical chemistry. The winner of this award is a student who has shown high performance in terms of grades and dedication in CHM 356, CHM 358, CHM 353, and either CHM 355 or CHM 455.

Senior Organic Chemistry Award (ACS): The recipient of this award was *Catherine Duke*.
Biochemistry Award: The recipient of this award was *Thomas Harper*. The award is given to a chemistry major that has excelled in CHM 461, CHM 462 and 463. The student must have completed CHM 463 by the end of the current academic year. Biochemistry faculty selects the awardee based on the above criteria.

Senior Chemical Education Award: This award is given to a Chemical education major, typically a graduating senior. The Chemical Education faculty selects the awardee from the best students meeting the above criteria. The recipient of this award was *Jessica Vogl*.

American Institute of Chemists Award: *Michael Esch* was the recipient of this award, which is given to the senior chemistry major who meets all or most of the criteria for the Outstanding Senior Award. The Chemistry faculty selects the awardee from the eligible students.

Outstanding Senior Chemistry Award: In order to be eligible, a senior, presenting in CHM 491 of the current academic year, must be a declared chemistry major and have an overall GPA of 3.5 or greater. The Chemistry faculty selects the awardee from the eligible students based upon the following criteria: Research participation; Service to the department; Extracurricular activities; and General attitude. The award recipient was *Katherine Coburn.*

Outstanding Senior Biochemistry Award: In order to be eligible, a senior, presenting in CHM 491 of the current academic year, must be a declared chemistry major, with a Biochemistry emphasis, and have an overall GPA of 3.5 or greater. The Chemistry faculty selects the awardee from the eligible students based upon the following criteria: Research participation; Service to the department; Extracurricular activities; and General attitude. The award recipient was *Hollister Swanson.*
Outstanding Undergraduate Research Award: In order to be eligible, a chemistry major must show outstanding skills, motivation, and progress in undergraduate research. This award is reserved for students that display exceptional abilities to (a) thoroughly understand their research project, (b) think critically and creatively in the research processes, (c) work independently, and (d) make significant progress in their research. In addition to participating in multiple CHM 499 and/or summer research opportunities, the awardee should also demonstrate the ability to disseminate research work to the scientific community either at regional/national conferences or through publications. Nominations for the award are be submitted by the students' research advisors in the form of a written research activity summary. The Scholarship and Development Committee then selects the award winner(s). The award recipient was *Paul Morse.*

Outstanding Service Award: This award is given to chemistry major that has made significant contributions in service to the department. Nominations for the award are solicited from the department and other service related areas, and includes a summary statement of the student's service record. Service obligations may include stockroom duties, tutoring, serving as an SLA, Chemistry Club involvement, community outreach, etc. The Student Affairs Committee then selects the award winner(s). The award recipient was *Alexandra Bouza*.

Chemistry Faculty and Staff Receive Awards

A tradition of excellence in teaching, scholarship and service continues in the Chemistry Department. In the 2014-2015 school year, ten faculty and staff colleagues were honored with various teaching, research and service awards.

BCCE Garners Faculty and Staff Two CLAS Service Awards in 2015
Grand Valley State University hosted the 2014 Biennial Conference on Chemical Education (BCCE) in August. Many of the faculty and staff involved in hosting this event received awards for their work on April 16, 2015 as part of the 2015 CLAS Outstanding Service Awards. A team of faculty and staff members, including chemistry department laboratory supervisor **Michelle DeWitt** received the CLAS Administrative/ Professional Outstanding Team Project Award for their hard work in organizing the conference. Other members of this team included Mike Ashcraft, Sandi Bacon, Nancy Crittenden, Karen Denby, Sue Korzinek, Brenda Lindberg, Karen Matchett, Diane Miller, Fred Mooney, Aaron Perry, Kellie Pnacek-Carter, Mary Ann Sheline, and chemistry faculty member **Robert Smart**.

In addition, three faculty members jointly won the CLAS Annual Faculty Service Award for their roles in organizing the conference: General Conference Chair **Sherril Soman**, Program Chair **Julie Henderleiter,** and Workshop Coordinator **Stephanie Schaertel** were all recognized for their hard work and the success of the conference.

Michelle DeWitt (Lab Supervisor) received the 2015 CLAS Service to the Community Award. The CLAS Administrative and Professional Service to the Community Award recognizes outstanding college, university and professional service.

Richard Lord (Assistant Professor) received the *Center for Scholarly and Creative Excellence (CSCE) Distinguished Early-Career Scholar Award*. The Distinguished Early-Career Scholar Award honors remarkable investigators who began their independent scholarship within the past six years. These scholars demonstrate mastery in their field and show significant potential for continued success. The award recipients have made major contributions to theory, research and creative practice, and they have earned national recognition for their outstanding achievements.

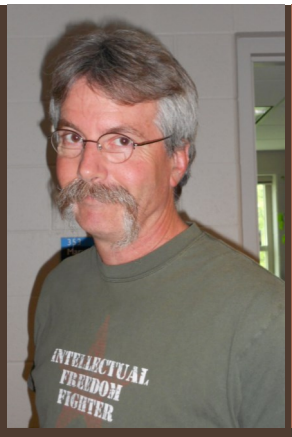
Stephen Matchett (Professor) received the *2015 CLAS Lifetime Faculty Service Award*. The CLAS (College of Liberal Arts & Sciences) Lifetime Faculty Service Award is given in recognition of many years of outstanding service to the Department, Division, College, University, and Community.

Stephen Matchett (Professor) received the *2015 Professor of the Year Award.* The Professor of the Year award is given by the TRiO Student Support Services. This award recognizes a faculty member who goes above and beyond the expectations of an educator to reach students in their class.

Harvey Nikkel (Professor) received the *Milestone Award for 40 Years of Service at GVSU.* Dr. Nikkel began his career at GVSU as an Assistant Professor of Chemistry in September of 1974. He received tenure in 1978, and was promoted to Full Professor in 1988. Dr. Nikkel served as Chair of the Chemistry Department from 1989 until 2004, during which time the department grew from 7 faculty members to 25 faculty members. Dr. Nikkel's specialty is biochemistry, and he continues to teach and advise students in this field. The University and the Chemistry Department thank Dr. Nikkel for his dedicated service!

Thomas Pentecost (Associate Professor) received the *2015 Pew Teaching Excellence Award.* The Pew Teaching Excellence Award was established to recognize distinguished teachers from across GVSU, particularly those who use multiple approaches in the classroom, stimulate intellectual curiosity in students, and demonstrate commitment to student learning. Dr. Pentecost routinely teaches courses in general chemistry, organic chemistry, physical chemistry, and chemistry education. His students frequently praise him for the interactivity of his classroom, his availability and willingness to help students, and his sense of humor and enthusiasm in the classroom.

Brad Wallar (Professor) received the *Distinguished Undergraduate Mentoring Award* from the *Center for Scholarly and Creative Excellence (CSCE)* at GVSU. This award is intended to recognize excellence in mentoring undergraduate researchers. Dr. Waller conducts research on the structure and mechanism of beta-lactamases in collaboration with a large group of undergraduate researchers in his laboratory.



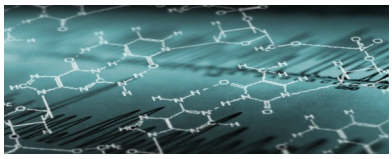
Dr. Stephen Matchett


Dr. Harvey Nikkel


Dr. Thomas Pentecost


Dr. Brad Wallar

Departmental Research Update



The Chemistry Department has consistently maintained as its priority research endeavor that involves the active participation of undergraduate student researchers. As in previous years, many faculty members attended regional and national meetings to present work accomplished with their undergraduate research co-workers. Herein is provided update of some faculty research activity.

John Bender continues his research in Inorganic synthesis. In the summer of 2015, John worked in collaboration with **Shannon Biros** on phosphine syntheses, and derivatiztions with chalcogenides and metal complexation. This work involved the following undergraduate coworkers; Alan Lear, Nick Bostater, Sean Riley, and Jeremy Cunningham.

Shannon Biros continues her research in organic synthesis with undergraduate co-workers. Shannon just returned to the department after a year long sabbatical. The Biros group presented their research at the 248th and 249th national meetings of the ACS.

Paul Cook and his students continue their X-ray crystallographic analyses of the enzymes involved in bacillithiol production and function. After data collection trips to Argonne National labs, his students presented posters of their work at Student Scholars Day and at the Central/Great Lakes Regional ACS meeting in May 2015.

Matthew Hart continues his research in organic synthesis with undergraduate co-workers. At least four undergraduate researchers worked with Matt over the course of the 2014-2015 academic year. The Hart group presented their research at the 249th national meetings of the ACS.

Debbie Herrington has been continuing her work with the Target Inquiry program. The 10 teachers in Cohort 4 are currently writing up their final projects and getting ready to present their work at a Regional National Science Teaching (NSTA) conference in November. Two of the TI teachers were recently recognized by the Michigan Science Teacher Association as High School Teacher of the Year (Deanna Cullen) and Teacher of Promise (Ashley Meyer). Over the past year the NSF funded study of the TI program has involved 3 undergraduate students (Molly Edwards, Stephanie Tanis, and Roxana Dumitrache) and a post-doctoral fellow (Senetta Bancroft), and has resulted in seven presentations at national conferences, two invited workshops, and two publications submitted with another one in preparation. Dr. Herrington has also been working with Dr. Jessica VandenPlas (GVSU) and Dr. Ryan Sweeder (MSU) on a study looking at students' use of simulations for learning difficult chemistry concepts. Two undergraduate students (Dena Warren and Karli Gormley) have been working with Dr. Herrington and Dr. VandenPlas on analyzing the data for this study and preliminary results were recently presented at the Gordon Conference: Chemistry Education Research and Practice.

Mary Karpen has wrapped up her work in creating an interactive computer laboratory anual for the CHM 230 course, Introduction to Organic and Biochemistry. She is collaborating with Dr. Pieter deHaseth of Case Western Reserve University, on modeling bacterial RNA polymerases. She also collaborates with Dr. Paul Cook, performing molecular dynamics simulations of a series of enzymes important in bacillithiol synthesis. These projects have resulted in a journal article and three student presentations:

Dalila Kovacs continues her research on green chemistry with undergraduate co-workers. At least three undergraduate researchers worked with Dalila over the course of the 2014-2015 academic year.

Andrew Lantz and his research group worked on three research projects: 1) the development of an organic redox electrolytes for energy storage (e.g. flow cells and pseudocapacitors), in collaboration with Vinazene, Inc. (supported by DOE and NSF), 2) the development of a capillary electrophoresis based method for the enantioseparation of chiral silanes, and 3) the development of capillary electrophoresis based methods for microbial separation and detection using isoelectric focusing.

Chris Lawrence and his research group continue to work on Computer modeling of the mechanism of water evaporation; design of ligands for capture of lanthanides and actinides. Two undergraduate researchers worked with Chris this past academic year, 2014-2015.

Dave Leonard and his research group continue their work on β-lactamase enzymes, and had research students present posters at the Midwest Enzyme Chemistry Conference (Chicago) and American Chemical Society National Meeting (Boston). The Leonard group bid farewell to Chemistry major Tom Harper and Zak Hundley.

Richard Lord continues his research in computational chemistry with undergraduate co-workers. The Lord group presented their research at the 248th and 249th national meetings of the ACS. In addition, Richard was co-author in more than six peer-reviewed publications in the course of the 2014-2015 academic year.

George McBane worked with undergraduate researchers and with **Stephanie Schaertel** to develop a diode-laser-based technique for measuring pressure-broadening coefficients of molecules in the gas phase.

Felix Ngassa continues his research on synthetic organic chemistry with undergraduate co-workers. Five students worked in the Ngassa group in 2014-2015 academic year.

Rachel Powers continues her research in Biochemistry/Crystallography. Rachel, her undergraduate researchers, and collaborators published three papers in the 2014-2015 academic year. In addition, Rachel's group presented a poster at the 249th national meeting of the ACS.

Min Qi continues her research in analytical chemistry. Min gave a presentation at the 248th national meeting of the ACS.

Stephanie Schaertel worked with two GVSU students and with **George McBane** to develop a diode-laser-based technique for measuring pressure-broadening coefficients of molecules in the gas phase.

Scott Thorgaard is currently mentoring two students in his research group. Austin Ronspees joined the group in Winter 2015, and Christopher Peruzzi joined in Summer 2015. Austin is working on a project which uses electrochemistry to detect and track single insulating nanoscale and microscale objects in solution, specifically polymer nanoparticles and single bacteria. Christopher is working on a project to observe electron transfer reactions occurring at single conductive nanoparticles with the objective of providing new means to study heterogeneous catalysis and characterize nanomaterials. During the 2014-2015 academic year, Scott had two book chapters published in the book "Nanoelectrochemistry" (CRC Press, editors Mirkin, M. and Amemiya, S.). The chapter titles and authors are *"In Situ Atomic Resolution Studies of the Electrode/Solution Interface by Electrochemical Scanning Tunneling Microscopy"* (authors: **Thorgaard, S.**; Buhlmann, P.) and *"Stochastic Events in Nanoelectrochemical Systems"* (authors: Bard, A. J.; Boika, A.; Kwon, S. J.; Park, J. H.; **Thorgaard, S.**).

Jessica VandenPlas continues her research in chemical education with undergraduate co-workers.

Randy Winchester continues to investigate the synthesis of chiral silanes and the preparation of theoretically interesting silicon compounds. In January 2015 he gave a presentation at New College in Sarasota, Florida on Resonance and the sila-allylanion. Ckat Duke, a member of the Winchester group, presented at the VAI Undergraduate Research Symposium and at the ACS National Meeting in March. This year, a large number of Winchester group researchers graduated: Kelly Le, Michael Maddalena, Ckat Duke and Christa Purdy.

Student News

Ashley Meyer selected as 2015 Michigan Teacher of Promise
The Board of the Michigan Science Teachers Association selected Ashley Meyer as the 2015 Michigan Teacher of Promise. Ashley is a middle school teacher at Hamilton Middle School and is enrolled in the NSF funded Target Inquiry program at GVSU, a program designed to meet the professional development needs of middle and high school science teachers for developing an inquiry-based science classroom.

Alyssa Cabelof wins Michigan Space Grant
Alyssa Cabelof, a junior Chemistry major at GVSU, received an Undergraduate Fellowship from the Michigan Space Grant Consortium for 2015. Her project, "Computationally-Guided Search for Reductive Coupling Catalysts," will be a collaborative project between the Lord group at GVSU and the Groysman lab at Wayne State University.

Katherine Coburn Wins Best Poster Award
GVSU student **Katherine Coburn** presented a poster at the Midwestern Symposium on Undergraduate Research in Chemistry on October 11th, 2014, winning the best poster award for the Inorganic division. 129 undergraduate participants, from 38 universities, attended the conference, which took place on the Michigan State University campus in East Lansing, Michigan. More than 100 posters were presented at the Symposium. Katherine's poster, titled "Investigation of a Novel Multi-dentate Ligand for Extraction of f-elements" was co-authored by **Michael T. Perruzi** and **Dr. Shannon Biros**.

Alumni News

Sean Riley, a **2015** graduate, recently got contract employment with BASF in Detroit.

Ben Thome, a **2011** graduate, recently got married and should be on track to complete his Ph.D. at the University of Akron soon.

Cynthia Luxford, a **2008** graduate, will be starting a tenure track position in Chemistry Education at Texas State University in the fall of 2015.

Rodney Nyland, a **2003** graduate with a double major in CHM (Biochemistry Emphasis) and BMS sent the following update for the newsletter. Rodney wrote: "After leaving GVSU I went to Purdue University to study medicinal chemistry and molecular pharmacology, and worked in the lab of Richard Borch designing and synthesizing anticancer drugs. Four years later I took a postdoctoral position at Johns Hopkins School of Medicine as a medicinal chemist. In 2011, I accepted my first faculty appointment teaching medicinal chemistry and pharmacology at South College School of Pharmacy in Knoxville, Tennessee. And in 2013, I was fortunate to move back home to Michigan with my current position teaching pharmacology at Oakland University William Beaumont School of Medicine in Rochester, MI."

Chemistry Department Graduates its Class of 2015

The Chemistry Department's Class of 2015 celebrated their graduation from GVSU in April. The annual seniors' banquet was combined with the award of prizes that honors the most outstanding students in the Chemistry Department for the 2014-2015 academic year. At the combined celebration held at the Alumni House in the Allendale campus, family and friends joined the graduating seniors. Also present were the faculty and staff of the Chemistry Department. The graduating seniors, who graduated in December 2014, were: *Cannella Cristian; Michael Esch; Colin Jenks; Auguste Niyibizi;* and *Sarah Rauser*. The graduating seniors, who graduated in April 2015, were: *Samantha Bidwell; Alexandra Bouza; Ashley Brady; Michael Brunner; Katherine Coburn; Catherine Duke; Thomas Harper; Zachary Hundley; Logan Kukulis; Kelly Le; Michael Maddalena; Paul Morse; Ben Nicholson; Emily Peters; Christy Purdy; Brian Rawls; Tanner Remick; Sean Riley; Brandon Savage; Catlin Schalk; Justin Shady; Hollister Swanson; Jessica Vogl; Kevin Walker; Alexander Wolf;* and *Sarah Wyse*.

Jessica Schoenherr

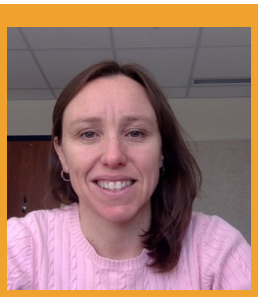
Mary Jo Smith

New Faculty 2015-2016

Jessica Schoenherr is the new Chemistry and Biology Devos/Kennedy Lab Supervisor. Jessica will also be teaching CHM 115 labs in the fall. Jessica is an alumna of GVSU with a Biology major and Chemistry minor. She did undergraduate research with Prof. Brad Wallar.

Mary Jo Smith is the new Laboratory Supervisor for 115 and 116 General Chemistry and excited to be a full time Laker. She has been with GVSU as an Adjunct Professor after years of experience with emulsions and reverse engineering lotions as a Formulation Chemist for a personal care private label manufacturer. Outside of chemistry she enjoys volunteering as a Boy Scout Leader, a Sunday School Teacher, and a Facilitator at Kid's Food Basket.

There are two Affiliate Instructors joining us this fall; **Heidi Cuticchia** and **Rachel Driscoll** .



Heidi Cuticchia

Rachel Driscoll

Student Scholars Day 2015

More than a dozen Chemistry students presented their research results in either oral or poster form at the GVSU Annual Student Scholars Day on April 8, 2015. Student scholars and their sponsors were the following:

Michael Maddalena and Tanner Remick. "A Novel Synthesis of a Hetero-Disubstituted Phosphine and Organolithium Reaction with Triphenylphosphine" Sponsor: *John Bender*

Kelsey Winchell. "A Structural and Functional Analysis of BshA from *Bacillus subtilis*: The First Enzyme of the Bacillithiol Biosynthesis Pathway" Sponsor: *Paul Cook*

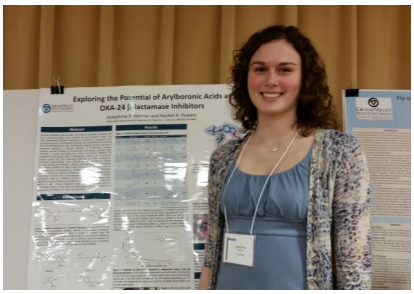
Ian Green. "Computational Analysis of Ligand Binding and Protein Dynamics in Bacillithiol Biosynthesis Protein BshC" Sponsors: *Paul Cook* and *Mary Karpen*

Aaron Hillsamer. "Computational Investigation of Erythritol Hydrogenolysis" Sponsor: *Dalila Kovacs*

Kodey Kamstra and Jeremy Schmaltz. "Conversion of Coffee Grounds to Biodiesel" Sponsor: *Dalila Kovacs*

Samantha Bidwell. "Copper(I) Catalyzed Triazole Synthesis: A Computational Exploration" Sponsor: *Richard Lord*

Kathleen Venhuizen. "Designing Guided-Inquiry Organic Chemistry Laboratory Procedures to Promote Critical Thinking" Sponsor: *Felix Ngassa*

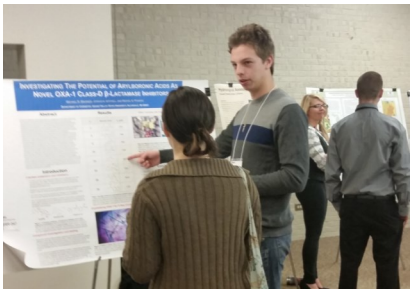


Josephine Werner. "Exploring the Potential of Arylboronic Acids as OXA-24 b-Lactamase Inhibitos" Sponsor: *Rachel Powers*

Emily Peters. "Flow Cell Technology Using Aqueous Organic Electrolytes" Sponsor: *Andrew Lantz*

Andrew Vanderweide. "How do CMPO Ligands Bind to Lanthanides? A Combined Experimental and Computational Study" Sponsor: *Richard Lord*

Heidi Conrad and Talon Kosak. "How Does BBr_3 Cleave Ethers? A DFT Mechanistic Study" Sponsors: *Andrew Korich* and *Richard Lord*



Michael Brunner. "Investigating the Potential of Arylboronic Acids as Novel OXA-1 Class D b-Lactamase Inhibitors" Sponsor: *Rachel Powers*

Alessa Kulesza and Erin Leach. "Modification of Aromatic Groups on Carboylmethylphosphine Oxide Ligands for Sensitizing Lanthanide Luminescence" Sponsor: *Shannon Biros*

Jacob Griffin and Kelsey Hodge. "New Approaches to Measuring the Kinetics of Metal Olefin Substitution in Asymmetric Iron Olefin Complexes" Sponsor: *Stephen Matchett*

Catlin Schalk. "One Step Closer to Predicting Reaction Rates: Measuring a Pressure Broadening Coefficient of Carbon Monoxide Perturbed by Neon" Sponsors: *George McBane & Stephanie Schaertel*

Talon Kosak and Sean Riley. "Preparation of Trisubstituted Phosphines from Triphenylphosphine and Halides via Phosphine-lithium Reagents Generated In Situ" Sponsor: *John Bender*

Catherine Duke. "Research on the Synthesis and Investigation of a Silole Anion" Sponsor: *Randy Winchester*

Benjamin Nicholson. "Structural and Functional Studies of GDP-6-Deoxy-Talose and GDP-Rhamnose Biosynthetic Enzymes" Sponsor: *Paul Cook*

Auguste Niyibizi. "Synthesis of Biphenyl Urea Derivatives of 3-Iodothyronamine" Sponsor: *Matthew Hart*

Nicholas Bostater and Jeremy Cunningham. "Synthesis of Hetero-substituted Bidentate Ligands and Aryl Phosphines: An Attempt to Further Research Nuclear Waste Remediation" Sponsor: *John Bender*

Eva Gulotty, Aaron Rosenberg, Adam Wigger, and Alexander Wong. "Synthesis of Novel Ureas as Potential Antimicrobial Agents" Sponsor: *Matthew Hart*

Alyssa Cabelof and Kelsey Hodge. "Synthesis of cis-1,2-bis (diphenylphosphino)ethylene and cis-1-(diphenylthiophosphoryl)-2-(diphenylselenophosphoryl)ethylene" Sponsor: John Bender

Eva Gulotty. "Where is the Lone Pair" Sponsor: *Randy Winchester*

Molly Edwards. "I want to be the inquiry guy! How research experiences for teachers transform beliefs about teaching science as inquiry" Sponsor: *Debbie Herrington*

Some 2015 Graduating Seniors Reflect on Their Time At GVSU and Shared Some Fun Memories

I spoke with a few graduating seniors who shared with me some memories of their time at the chemistry department. I asked the students the following questions: (1) Where are you from?; (2) Where are you going after graduation?; (3) What are the fun memories you have during your time here at GVSU?; (4) If there is one famous chemist/scientist you admire (not your professors), who will that be?; (5) One fun fact that only your peers and classmates may know about?; (6) Where do you see yourself 10 years from now?; (7) Anything else you would like to share?

Alexandra Bouza: "(1) Rochester, MI. (2) University of Michigan - Program in Biomedical Sciences (biological chemistry). (3) Time spent with friends, undergrad research. (4) Rosalind Franklin. (5) I am literally allergic to the cold and get hives when I spend too long outside. (6) R and D at a pharmaceutical company. (7) N/A."

Michael Brunner: "(1) I am from St. Clair, MI. I attended St. Clair High School and then St. Clair County Community College for two years (earning an Associates of Honors Science). (2) I will be going to work for St. Jude's Research Hospital in Memphis, TN. I will be a Research Technologist in the lab of Dr. Brenda Schulman, PhD working on Ubiquitin research. (3) Research in the Powers' lab, Employment in the Chemistry stockroom, and spending time with close friends. Off campus, I also loved teaching swim lessons and making coworkers laugh at the David D. Hunting YMCA in Grand Rapids. (4) Max Planck – His contributions to Quantum Mechanics and to the world of science just absolutely blow my mind. (5) I dance and sing in the labs (both research and class) when no one else is present (at least to my knowledge). The janitorial staff began requesting their favorites towards the end of my last semester. (6) Ten Years from now I hope to have attended professional school (either medical school or grad school – still hazing out the details of what I want to do!) and establishing my professional career. (7) To all students reading this – TAKE ADVANTAGE OF WHAT GVSU OFFERS! Do research with your professors, apply to work in the Chem stockroom, sign up to be a tutor, bug your professors to lead a discussion group, and request to be a TA*! If you get involved you will NOT regret it and the opportunities it affords you when you apply to professional schools and prestigious jobs sets you apart from your peers across the nation. The experiences you will gain working alongside the professors of the chem department will make you a better person and scientist guaranteed! I cannot recommend it highly enough so go ask and be persistent – the worst that can happen is you hear a couple no's; the best that can happen is participating in experiences that change your life!"

Katherine Coburn: "(1) Grand Rapids, Michigan (I went to Forest Hills Central Public High School). (2) The University of Maryland in Baltimore for their Medical Scientist Training Program (MSTP, MD PhD). (3) I really had a great time working in Dr. Biros' lab. I became such good friends with some of my lab mates that we actually went on spring break vacation together this year. I also loved the summer REU I completed with Dr. Biros. We learned a lot in the lab, but had a lot of fun (like making our own dip 'n dots ice cream). (4) I admire Rosalind Franklin, because of her contributions to discovery of the structure of DNA. She was also a major pioneer in understanding the structure of viruses (such as polio). Rosalind paved the way for future female scientists (like myself) in a very male dominated field. (5) I am a former hairdresser and used to have long, fuchsia hair. (6) In a medical residency program that allows me to continue to perform basic sciences research. (7) I am very thankful for all of the mentoring I received from Dr. Biros and the rest of the professors at GVSU. The welcoming environment at GVSU enabled me to flourish and reach my full academic potential as a transfer student."

Catherine Duke: "(1) Orlando, FL. (2) University of Vermont in Burlington, VT. (3) There are so many, but to name a few - ACS meeting in Denver was an amazing experience; Long days in the research lab which include research as well as funny youtube videos; Graduation cap decorating with other Chem Seniors; All the random funny moments in the inner corridor! (4) That one is hard. I respect the work of many chemists/scientists, but it's the people here who have taught me not only the science behind chemistry, but also taught me that I can do this. It's the professors here that have been truly inspiring to me. (I know you said not your professors, but that's really the only answer I can think to give). (5) Prior to taking up hockey I pursued ballroom dancing for a number of years. (6) Hopefully as a professor at a research based institution. (7) These last two years have been wonderful. I have learned so much, and I am so grateful for my time here!"

Kodey Kamstra: "(1) I am from Grandville, Michigan. (2) I plan on working in the industry, but haven't found an opportunity yet. (3) Doing research has been the most interesting and fun experience at GVSU. (4) I admire Louis Pasteur. (5) Fishing and hunting are my biggest passions, as I compete in tournaments and contests. (6) I can see myself working in the industry as R&D after obtaining my masters, along with continuing fishing tournaments on the side. (7) N/A."

Kelly Le: "(1) I am from Sterling Heights, MI. (2) I am thinking about doing an internship after graduation. I am planning on applying to PharmD/PhD or PharmD programs this coming Fall. (3) I would definitely say hanging out with friends, presenting my research at conferences, going on Alternative Breaks trips, and being involved in Chemistry Club. (4) Albert Einstein. (5) I was born in Ventura, California. (6) I could see myself working as a clinical pharmacist and doing drug research. (7) I would like to thank the McNair Scholars Program for giving me the opportunity to do research here. Also, I would like to thank all of my chemistry pals and professors for making my time here at GV fun and memorable. You guys rock!"

Ben Nicholson: "(1) I was born and raised in Grand Rapids. (2) After graduation, I am either going to medical school at Michigan State or pursuing a Master's degree in Medical and Bioinformatics here at GVSU. (3) During summer research, I orchestrated entire lab lunch outings called Taco Tuesday, where up to 20 of us would go eat at

different Mexican places around the city. (4) I admire Richard Feynman because of his ingenuity and humility in discovering and teaching physics. (5) My nickname is nitroben, short for nitrobenzene, because of my fascination with explosive chemicals. (6) 10 years from now I would like to be starting my career as an attending physician at a hospital. (7) I've really enjoyed my education at GVSU. The chemistry department here is without equal. Thank you very much Dr. Ngassa. Thank you for teaching me organic so well."

Auguste Niyibizi: "(1) Originally, me and my family are from Rwanda. We moved here when I was yet a kid, and we currently reside in Grand Rapids Michigan. (2) I am headed to the Osteopathic School of Medicine at Michigan State University. I will be there for the next four years to complete my studies, in hopes of becoming an Osteopathic Physician. (3) Grand Valley hosts a lot of cultural events, one of which being an Arabian night. I really enjoyed eating, dancing, and learning about the Arabian culture and their way of life. (4) Rosalind Franklin would definitely be on the top of my list. Not because she revolutionized the field of biology through her scientific work in x-ray crystallography, but the dedication she had to her work. Most are aware that she was unable to receive the Nobel Prize because of her early death. We learn from her however, that the work that we do should not be based on our ability to gain profits, awards or recognition; for it is much bigger than that. Hard work, especially in a field that we are passionate about, can indeed change the world and improve the life of mankind, and that alone should be the reason we do what we do. (5) I play the cello and played in the school orchestra my freshman year of college. Although I do not play anymore, I am still able to pick up the instrument and play a tune or two. (6) I am hoping to work in under served areas, whether it be here in the United States, or in various developing countries around the world. I want to work in healthcare administration to reduce health care disparities by improving policies and making them more efficient. (7) I am just really thankful for my time here at Grand Valley. It is composed of a great network of faculty and staff dedicated to the success of the students. Also, special thanks to Dr. Matthew Hart, my research professor and mentor who took me in as a transfer student and greatly contributed to my learning and assisted me in navigating through the end of my undergraduate career."

Emily Peters: "(1) I am from Marshall, MI. (2) I am moving to South Bend, IN where I will be attending the University of Notre Dame's Chemistry Graduate School for analytical chemistry! (3) I had a great time hanging out and learning with all my friends in the corridor. It has been great having so many classes with all the same people. (4) Marie Curie. (5) I am a double major in BMS and chemistry; but love chemistry the most! (6) I see myself doing analytical chemistry hopefully with my PhD. (7) I am getting married in January!"

Tanner Remick: "(1) White Lake, Michigan. (2) After graduation I am attending the University of Wyoming to obtain my PhD. (3) Meeting new people and experiencing life away from my parents. (4) N/A. (5) I am both flat footed and left-handed. (6) I see myself hopefully living in Alaska. I also hope to have a job in Alaska too, whether that be at a university or with an oil company. (7) N/A."

Hollister Swanson: "(1) I am from St. Louis, Missouri. (2) I will be attending Wayne State University School of Medicine. (3) The best memories I have are the connections I have made with people. Inside of class, I made many friends with similar interests as me, which made me feel more passionate about my interests. Outside of class, I was able to meet people from many different backgrounds allowing me to appreciate the differences in others. (4) Stephen Hawking for all he has been able to accomplish despite being stricken with ALS. (5) I am one of 5 children. (6) Practicing as a physician at a university hospital where I can be involved in clinical research and medical student development. (7) I want to thank the entire GVSU Chemistry Faculty for providing a intellectually stimulating environment for me to grow academically and personally. I personally attribute all of my success at GVSU to the amazing faculty who truly care about their students' passions and welfare. I hope all of you know that the way you conduct yourselves with students is thoroughly appreciated. Finally, Thank you Dr. Ngassa for your assistance in my development as a chemist. When taking your course, you made me seriously consider going to graduate school for organic chemistry. If I do not see you again before I graduate, I wish you the best in your career and hope we have the chance to connect again in the future!"

Jessica Vogl: "(1) Schaumburg, IL. (2) I am not 100% positive yet. I am going to be applying for teaching positions both in Michigan and around home in Illinois. So I'll end up either on the east or west coast of Lake Michigan. (3) My best memories come from the people I met and the opportunities I was given at Grand Valley. I was a part of the Rowing Club for my first four years and was able to compete across the US and immediately met a great group of friends. In the chemistry department I was able to work with Van den Plas and Pentecost on a research project for three years. (4) N/A. (5) N/A. (6) In a perfect world 10 years from now I will be teaching chemistry, maybe another science or math class, and coaching cross country and track and field. I have no specific place in mind but somewhere near a (lake) shore. (7) Even though I did not have the smoothest trip through Grand Valley, I made it. The professors and advisers know much more than just their content area and really want to see everyone succeed. I cannot thank my professors enough for helping me learn more than chemistry."

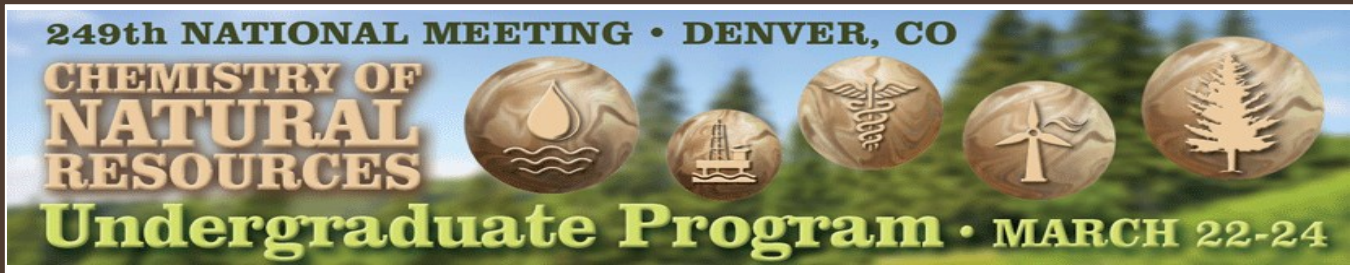
Several GVSU faculty and students attended the 28th Annual Symposium of the Protein Society in San Diego, CA from July 27-30, 2014. The contributions of the GVSU chemistry department are highlighted below:

David Leonard's research group presented two posters:

- Joshua M. Mitchell and David A. Leonard. *Common clinical substitutions enhance the carbapenemase activity of OXA-51-like class D β-lactamases from Acinetobacter spp.*
- Jozlyn R. Clasman, Cynthia M. June, Brianna J. Jackman, Rachel A. Powers, and David A. Leonard. *Biochemical basis for the extended spectrum cephalosporinase activity of a clinical AmpC β-lactamase variant.*

Rachel Power's research group presented three posters:

- Josephine P. Werner, Rachel A. Powers. *Exploring the Potential of Arylboronic Acids as Inhibitors of OXA-24 β-lactamase.*
- Leslie A. Wyman, Neil V. Klinger, Rachel A. Powers. *Structure-based Discovery of a Novel Inhibitor of OXA-1 β-lactamase.*
- Joshua M. Mitchell, Rachel Powers. *Mapping The Binding Sites Of Class D beta-Lactamases For Inhibitor Design And Discovery.*



Several GVSU faculty and students attended the 249th National Meeting of the American Chemical Society in Denver, CO from March 22-26 2015. The contributions of the GVSU chemistry department are highlighted below:

Richard Lord co-authored two talks with collaborators from Indiana University, titled "*Dehydrohalogenation as an effective route to unsaturated bimetallic and monometallic systems featuring a proton-responsive pincer ligand*" and "*Proton-responsive pincers: Enabling bifunctional Lewis acidic/ Bronsted basic late metal complexes*".

Deborah Herrington and her postdoctoral researcher **Senetta Bancroft** co-authored several presentations with collaborators from Miami University. This included two posters, titled "*Describing and characterizing the affective domain in middle and high school science students*" and "*"I want to be the inquiry guy!" How research experiences for teachers transform beliefs about teaching science as inquiry*". Senetta also presented a talk titled "*Tool trouble: Challenges with using self-report data to evaluate long-term chemistry teacher professional development*".

Shannon Biros and her research group presented two posters at the meeting in collaboration with researchers from the University of Tampa. Student **Mike Peruzzi** co-authored the poster "*Luminescence and extraction properties of novel tripodal CMPO ligands*", which was also accepted to SciMix. Student **Hope Sartain** co-authored the poster "*Tripodal carbamoylmethylphosphine oxide (CMPO) ligands for f-element chelation: Solution photophysical studies and lanthanide/actinide extraction properties*".

Rachel Powers and student **Ryan Hoogmoed** co-authored a poster titled "*Optimization of fragment inhibitors for the class D β-lactamase OXA-24*".

Christine Rener, Chemistry faculty member and Vice Provost for Instructional Development and Innovation and Director of the Pew FTLC gave a talk titled "*Starting at the source: Foundational views about teaching influence adoption of learner-centered teaching practices*".

Randy Winchester and student **Catherine Duke** presented a poster titled "*Synthesis and investigation of sila-allyl anions*".

Matthew Hart and student **Auguste Niyibizi** co-authored a poster with collaborator Alyssa Snyder titled "*Synthesis of biphenyl urea derivatives related to 3-iodothyronamine*".

Several GVSU faculty and students attended the 248th National Meeting of the American Chemical Society in San Francisco, CA from August 10-14, 2014. The contributions of the GVSU chemistry department are highlighted below:

Shannon Biros and her research group gave three presentations at the meeting. Student **Paul Morse** presented a poster titled "*Differences in bridge length of bidentate phosphoryl ligands regarding f-element complexes*" in a poster session on Lanthanide and Actinide Chemistry. Student **Katherine Coburn** gave a poster titled "*Investigation of a multidentate carbamoylphosphine oxide compound and its ability to separate lanthanide and actinide metals*" in the same session that was also accepted to SciMix.

Richard Lord co-authored a talk titled "*DFT studies of intramolecular electron-transfer in some ruthenium(II) pyridine, pyrazine, and bipyridine complexes*" with collaborators from Wayne State University as well as Fu-Jen Catholic University of Taiwan.

Felix Ngassa and his group also gave three presentations at the meeting. Student **Kathleen Venhuizen** presented a poster titled "*Designing inquiry–based organic chemistry laboratory procedures to promote critical thinking*". The poster "*Facile synthesis of arylsulfonates and exploration of their use in Sonogashira and Ullman cross–coupling reactions*" was presented by student **Sean Riley**. Sean also co-authored a poster, presented by student **Tyler Cooley**, titled "*Direct Cu–free Sonogashira cross-coupling reaction of aryl sulfonates with terminal alkynes*".

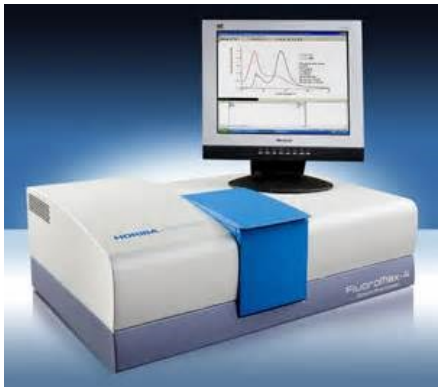
Min Qi gave a poster presentation titled "*Method development of antibiotics analysis in water*".

Chemistry Department Instrumentation Update

Preventive maintenance and repairs have kept most of the chemistry department's instrumentation up and running. Older pieces that are no longer supported by the vendors remain the biggest challenge. However, with assistance from the Dean's office, the department was able to purchase some new instruments.

Three of our Jasco FTIR units required servicing. These units have been virtually trouble free for many years but signals were weakening on some of the units. Two units required new lasers and one also required a detector voltage supply board. The third FTIR was not able to be repaired so a factory certified used unit was purchased to replace it. All four FTIRs were then equipped with updated laptop computers and the most recent version of Jasco's operating software.

The 20 year old Perkin Elmer spectrofluorometer is still in use but department needs led to the purchase of a new fluorometer/phosphorimeter from Horiba. The new instrument is a Fluroromax-4CP capable of routine fluorescence measurements and phosphorescence lifetime measurements. Add-ons include a temperature controlled sample cel, liquid N2 Dewar sample chamber, and a solid sample holder. This instrument will certainly enhance opportunities for several of our research groups.



Horiba Fluoromax-4

A computer and software upgrade were put into place on the Thermo Focus/DSQ GC/MS. Minor upgrades were also made on the DSQ mass spectrometer. This instrument has served us very well for 11 years requiring little except yearly preventive maintenance work. It is a heavily used instrument and funding for a new GC/MS is a priority. Donations will be gladly accepted and can be designated to instrument purchases by contacting our department Chair, Dr. George McBane, mcbaneg@gvsu.edu.

The department also purchased an Atago AP-300 polarimeter. This unit will be used in addition to the older Atago AP-100 for teaching labs and is also used by researchers doing chiral synthesis in the department.

Money has also been set aside to repair our TA Instruments TGA/DSC (Thermo-Gravimetric Analyzer/Differential Scanning Calorimeter). Once repaired, these units will be used in teaching labs and will support many research groups.

Many of our HPLC units are showing signs of age so the department has purchased a complete system from Thermo Dionix. While not quite an Ultra-HPLC, the new unit is capable of doing Rapid-HPLC at higher pressures than our current units. This allows for faster analysis times and decreased solvent use which will be perfect for our upper-level teaching labs as we enter a new curriculum format in the next few years. This instrument will run the same Chromeleon 7 software that four of our other chromatography units use. This certainly reduces the time required learning new software.

Licensing for software processing of NMR data has also been purchased. The software is from Mestrelab and includes the Mnova suite of software which includes: Mnova - NMR, NMRPredict, MS/LC/GC, qNMR for quantitation, and RM for reaction monitoring. The licensing is for an unlimited number of users and allows access to instructors and students on personal laptops or home computers indefinitely.

We also received a donation of a used ICP-MS from Honeywell Burdick and Jackson in Muskegon after Honeywell purchased a new unit. The donated instrument is a Perkin Elmer Elan 6000 that came from their clean-room area and is in perfect working condition. We hope to get the unit running by summer's end. After some renovation, we plan to have the unit housed in our existing instrument room aside the Varian SpectrA- AS atomic absorption spectrometer.

Perkin Elmer Elan 6000

The 300MHz JEOL and 400MHz Varian continue to provide reliable service for classes and research. Repair work undertaken last year gave us a good year with less trouble from the electronics side of the instruments, but we did need a service visit in December when the liquid helium Dewar (about 4K or -452.2 °F) had a plug due to some solid nitrogen in its fill line.

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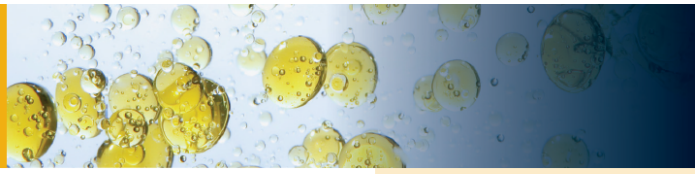

Public Lecture

Tuesday, October 20, 2015

Surf, Sink, or Swim: Understanding How Environmentally Important Molecules Behave at Water Surfaces

Reception — 5 p.m.
Evening Lecture — 6 p.m.
Grand River Room
Russel H. Kirkhof Center
Allendale Campus

Seminar

Wednesday, October 21, 2015

Going Nonlinear to Study Molecular Assembly at Oil-Water Interfaces

1 p.m.
Grand River Room
Russel H. Kirkhof Center
Allendale Campus

Geraldine Richmond, Ph.D., is the presidential chair and professor of chemistry at the University of Oregon. Her research focuses on nonlinear optical spectroscopy and computational methods applied to understanding the chemistry that occurs at complex surfaces and interfaces that have relevance to important problems in energy production, environmental remediation, atmospheric chemistry, and biomolecular surfaces.

Her scientific accomplishments include the Olin-Garvan Medal, the Spectrochemical Analysis Award, and the Joel Henry Hildebrand Award in the Theoretical and Experimental Chemistry of Liquids from the American Chemical Society. She also received the Oregon Scientist of the Year by the Oregon Academy of Science, the Spiers Medal of the Royal Society of Chemistry, the Bomem-Michaelson Award, and the American Physical Society Davisson-Germer Prize for Atomic or Surface Physics.

Professor Richmond has served on many science boards and advisory panels, and is currently serving the U.S. State Department as the 2015-2016 science envoy for the Mekong River countries, as a presidential appointee to the National Science Board, and as president of the American Association for the Advancement of Science (AAAS). She is also the founder and chair of COACh, a grass-roots organization assisting in the advancement of women scientists in both the U.S. and developing countries.

COMING SOON!

Sara Skrabalak, Ph.D.
James H. Rudy Associate Professor of Chemistry

Indiana University - Bloomington

April 14 and 15, 2016

Alumni Professional Networking Support

GVSU has established a "Career Contact Bank" on LinkedIn to help alumni develop professional connections with one another. It can be found through www.gvsu.edu/careers/gvsu-career-contact-bank-56.htm.