Chemistry Department Newsletter

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GRAND VALLEY STATE UNIVERSITY
DEPARTMENT OF CHEMISTRY

SOME FEATURES IN IN THIS ISSUE:

Editor:
Felix Ngassa
Layout:
Jennifer Glaab

Chemistry Department
312 Padnos Hall
www.gvsu.edu/chem
chmdept@gvsu.edu

A Word from the Chair

Greetings to alumni and friends of the GVSU Chemistry Department. We start this year with our ranks a bit diminished due to the retirement of John Gracki and the resignation of Ellen Yezierski and Jaime Curtis-Fisk. Many of you may not know John very well. He started out as a physical chemist in our department back in 1970, but for much of his career held administrative positions in the Dean's and Provost's office. For the past five years on phased retirement he was very popular among our first-year nursing students, teaching CHM 109 downtown. Ellen and Jaime have left the department to pursue other career options. Ellen wanted to pursue an opportunity to train graduate students as a professor at Miami University of Ohio, and Jaimie has taken an industrial position in Midland, MI. We are making up for these departures this year by searching for two new professors (Organic and Chemistry Education). So please, if you know of anyone who would be well suited to join our ranks, be sure to have them check out our job posting on our web page.

New faculty will be certainly needed as our ranks of chemistry majors seem to be swelling. For the first time, many of our upper-level courses are filling to capacity with more majors than ever moving toward graduation. Many of these students can claim to be studying from award-winning faculty. Just this year, we are proud to congratulate the following awardees: Brad Wallar (GVSU Outstanding Teacher), George McBane (GVSU Distinguished Contribution in a Discipline), Nate Barrows (Pew Teaching with Technology), and Chris Lawrence (CSCE Distinguished Early-Career Scholar).

Among our noteworthy initiative underway, we had another successful summer of hosting research students from the Target Inquiry graduate program for training high school chemistry teachers. We also have an active group keeping us at the forefront of Green Chemistry Education by developing a new Green Chemistry Certificate program, a new general education Green Chemistry Course, and participating in a major grant to fund a Green Chemistry consortium. We are also expanding our opportunities for international collaborations for students and faculty by setting up a partnership with Babeș-Bolyai University in Cluj, Romania. This past June, a delegation of three professors from Chemistry visited Cluj and invited their faculty to visit GVSU this year to finalize a partnership agreement.

More and more often, as I talk to people around the University, country, or world, I find they know about our fine graduates, award-winning faculty, or curricular initiatives (and sometimes they mention the football team). A good reputation, although difficult to quantify, is perhaps the best measure of success. This year GVSU celebrates its 50th anniversary. I would like to encourage all of our alumni and friends to contact us and let us know what we have done in our first 50 years to impact your life, and what we can do for you in the future as we move forward into our second half-century.

Todd A Carlson
Chair

Fall 2009 Arnold C. Ott Lectureship in Chemistry

Dr. Chad A. Mirkin

The Ott Lectureship was created and endowed by a gift from Arnold C. Ott and Marion Ott. Dr. Ott was one of the co-founders of Grand Valley and served on the Board of Trustees for 28 years. Our Ott Lecturer for 2009 was Chad A. Mirkin, the director of the International Institute for Nanotechnology at Northwestern University. Dr. Mirkin also serves as the George B. Rathmann Professor of Chemistry; Professor of Chemical and Biological Engineering; Professor of Biomedical Engineering; Professor of Materials Science and Engineering; and Professor of Medicine at Northwestern University.

Two lectures were scheduled on November 4, 2009, an afternoon presentation "Building Valency in Metallic Nanostructures: The Atom Analogy" held in 123 Manitou Hall, and an evening lecture "Programming Materials Assembly with DNA: Applications in Biology and Medicine" held in the Cook-DeWitt Center on the Allendale campus.

Dr. Mirkin is known for his development of nanoparticle-based biodetection schemes. He is the author of more than 380 manuscripts and 350 patents and applications. He is also the founder of two companies, Nanosphere, and Nanolink, which are commercializing nanotechnology applications in the life science and semiconductor inductries. He is currently the third most-cited chemist in the world and a member of President Obama's Council of Advisors for Science and Technology. He has received more than 50 national and international awards.

Chemistry Faculty Receive Teaching, Research and Service Awards

Dr. Nathan Barrows

The Chemistry Department faculty continues a tradition of excellence in teaching and research as evidenced by various teaching and research awards received during the 2009-2010 school year.

Nathan Barrows (Assistant Professor) received the "Pew Teaching with Technology Award" for 2009-2010.

Chris Lawrence (Associate Professor) received the Center for Scholarly and Creative Excellence (CSCE) "Distinguished Early-Career Scholar Award" for 2009-2010.

George McBane (Professor) received the "Distinguished Contribution in a Discipline Award" for 2009-2010.

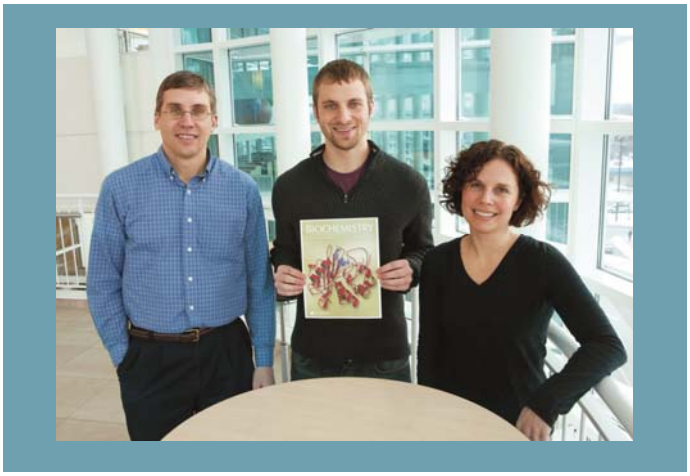
Harvey Nikkel (Professor) received a "Milestone Award" for 35 years of service.

Aaron Perry (Director of Laboratory Support for CLAS) received the "AP Innovation Award" for his work on a new web-based system for inventory and sharing of resources.

Brad Wallar (Associate Professor) received the "University Outstanding Teacher Award" for 2009-2010.

Research at GVSU Chemistry Department Makes the Cover Story of Biochemistry, an American Chemical Society Journal

The research of Chemistry faculty Dave Leonard and Rachel Powers, and GVSU Chemistry alumna Kyle Schneider made the cover story of Biochemistry, a journal published by the American Chemical Society. In the January-March 2010 cover of the journal, Biochemistry, the structure of the enzyme that Chemistry alumna, Kyle Schneider and Chemistry faculty, Dave Leonard and Rachel Powers, worked on is featured. Kyle Schneider did research under the guidance of Professors Dave Leonard and Rachel Powers, graduating in April 2009 with the "American Institute of Chemists Award". He is currently pursuing doctoral studies in Biochemistry at Yale University. While at GVSU, Kyle had the unique experience of conducting cutting-edge research on a fairly new drug (an antibiotic called doripenem, which is similar to penicillin). "The goal of the research was to investigate bacteria defenses toward antibiotics and to understand the mechanism by which bacteria are able to become resistant to antibiotics. I could not have have accomplished this without the help of my professors. That is what sets Grand Valley apart from other universities. You can work alongside professors and conduct one-on-one research as an undergraduate," said Kyle. Dr. Leonard emphasized the significance of their research findings. "The research is significant because scientists can possibly use the information to develop more effective drugs to help overcome antibiotic resistance. Antibiotic resistance can be very dangerous and therefore represents a huge health challenge," Dr. Leonard said.



Dr. Leonard, Kyle Schneider and Dr. Powers

The Chemistry Department Had Its Largest Representation of Students yet at an ACS Meeting

Several faculty and students from the Chemistry Department at GVSU presented research results at the 239th national meeting of the American Chemical Society (ACS) in San Francisco, CA, in March of 2010. At the meeting, faculty/student presentations came from the research groups of Shannon Biros, Matthew Hart, Deborah Herrington, Dalila Kovacs, Andrew Lantz, Dave Leonard, Felix Ngassa, Rachel Powers, and Randy Winchester. In particular, the participation of students at the San Francisco meeting is the largest yet to be seen in the department for the past two decades. The students who represented the department and presented posters were; Randall Breckon, Kaitlyn Driza, Ryan Enck, Jamie Gomez, Amanda Hanks, Nick Hefferan, Kevin Maupin, Shane McGrath, Mehreteab Mengsteab, Ryan Nelson, Alvina Qureshi, Jim Ruble, and Kirk Wyatt.

~Alumni News~

Mark Bryson, a **2009** graduate, is a Community Sanitation Advisor/Health Officer for the Peace Corps in Jamaica.

Brandon Klein, a **2009** graduate, is a Research Assistant at the Colorado Antiviral Pharmacology Laboratory of the University of Colorado, Denver.

Kyle DeKorver, a **2007** graduate, was a winner of the American Chemical Society (ACS) Division of Medicinal Chemistry Pre-doctoral Fellowship in 2010. As a winner of the Pre-doctoral Fellowship, Kyle was invited to the Medicinal Chemistry Gordon Research Conference this past August in New Hampshire. In addition, he is invited to the 2011 Fall ACS national meeting in Colorado. Kyle is currently a fourth year graduate student in the chemistry doctoral program at the University of Wisconsin, Madison. As at press time, Kyle and his wife **Brittland Winters-DeKorver**, also a **2007** graduate, were expecting their first child to be born on September 30.

Brooke (**Gartland**) **VandenBrink**, a **2003** graduate, earned her PhD in medicinal chemistry from the University of Washington.

Sarah Toman, a **2002** graduate, was named Mole of the Year by the National Mole Day Foundation in October 2009.

James Snider, a **1984** graduate, is the president of Critical Diagnostics, a company that specializes in medical devices, in San Francisco, CA. Commenting on the growth of GVSU, Dr. Snider noted how gratifying it is to see the department and the entire university continue to grow and thrive. "I will always appreciate my time at GVSU and especially the mentoring I received from Dr's Nikkel and Richmond. My experience at GVSU was instrumental to my success in graduate school and in my professional career since then. Following graduation from GVSU with a BS in chemistry in 1984 I pursued my PhD in biochemistry from the University of South Carolina, receiving that degree in 1990. Since then most of my career has been spent in industry developing life science research instrumentation, such as the real time PCR technology and systems, and more recently in medical devices. I've been with my current company, Critical Diagnostics, since August of 2005," Dr. Snider said.

Chemistry Club 2009-2010: A Retrospective Look at an Awesome School Year

During the 2009-2010 academic year, the Chemistry Club set some major objectives: increase involvement of all chemistry majors and provide many volunteer and social opportunities for students, faculty, and staff; stay involved in common events held in previous years and also create new events to connect students and faculty. These objectives were met and the club had an extremely successful year, culminating with an honorable mention award at the 239th national meeting of the American Chemical Society in San Francisco, CA. Membership of the club increased to 43 members, a 13% increase. Most importantly, more than half of the members actively attended meetings and events. Some of the events that involved the participation of the Chemistry Club include Chemistry at the Mall, Science Olympiad, and the Fall Social. Some new events include Particles and Pool, and the Northwestern Graduate School presentation.

The Particles and Pool event fulfilled the need to get more students involved by presenting a professor in a professional yet social setting. Free food was also used to increase participation. Attendance at meetings increased when snacks were provided and billiards or game night incorporated. Social events helped the students to connect with their faculty on a more personal level.

There was also an increased participation of members of the Chemistry Club as volunteers at the Regional Science Olympiad Event at GVSU. Members who volunteered assisted in chemistry-related activities in environmental chemistry, forensics investigations, and the science pentathlon. The involvement of members included answering students' questions, grading papers, and setting up and cleaning up the laboratories.

For Chemistry at the Mall, members of the Chemistry Club performed four demonstrations for visitors. These demonstrations involved creation of carbon dioxide bubbles from dry ice using a PVC pipe with a soap-coated end, extraction of iron from sand using magnets, interaction of Ferrofluid with magnets, and comparison of densities of gases using falling balloons. For its participation in the demonstrations, the Chemistry Club was recognized in the April/May issue of the InChemistry publication.

Many members of the Chemistry Club attended the 239th national meeting of the ACS in San Francisco, CA, in March 2010. Those members who attended were, Kirk Wyatt, Ryan Enck, Kaitlyn Driza, Ryan Nelson, Randall Breckon, Mehreteab Mengsteab, Amanda Hanks, and Jim Ruble. In addition to presenting posters of their research projects, the students also attended the Undergraduate Banquet and Award Ceremony where they joined faculty advisors, Dr. Matthew Hart and Dr. Rachel Powers, to accept an Honorable Mention Award from the ACS for the GVSU Chemistry Club.

Most of the funding for the Chemistry Club events was provided by the GVSU Student Life Fund. The Chemistry Club officers for 2009-2010 were, Kirk Wyatt as president, Jody Wycech as vice president and secretary, and Josh Davis as event coordinator.

Chemistry Department Graduates its Class of 2010

The Chemistry Department's Class of 2010 celebrated their graduation from GVSU in April. In a celebration that is part of the annual seniors' banquet held at the Alumni House in the Allendale campus, the graduating seniors were joined by their family and friends. Also present were the faculty and staff of the Chemistry Department. The graduating seniors were Sarah Anzell, Steve Asiala, Brittany Benson, Christina Billman, Kristen Bloch, Mark Bryson, Danielle Buglio, Nate Craft, Kristina Emery, Brandon Haines, Jennifer Heldt, Mike Kelly, Trevor Lott, Joe Loviska, Evan Lund, James Marr, Megan Mater, Nick Myers, Nick Renck, Kyle Schneider, Lucas Snider, Katie Stahrr, Emily Tamayo, Ben Thome, Tom Wigger, and Dan Wood.

Part of the celebration involved a contest to identify faculty and student high school photos, a lively game of "fact or crap", and the presentation of gag awards. The following were recipients of gag awards: *One Thousand Medical School Applications Award,* Kirk Wyatt; *The Evil Knievel Chemist Award,* Randy Breckon; *Future ACS President Award,* Autumn Trombka; *The Field of Dreams Award,* Casey Andrews; *Best Handwriting Award,* Giselle Jacobson; *The Electric Chemist Award,* Renee Bouley; *Erin Go Brag Award,* Nick Schooley; *The Thermochromic Chemist Award,* Sam DeJong; *Everything is Better in Texas Award,* Amanda Hanks; *The Caffeinated Juggling Chemist Award,* Michael DeLaMarre; *Most Likely to be Found at Founder's on Monday Evenings,* Mehreteab Mengsteab; *The Instrument Guru Award,* Kaitlyn Driza; *Excellence in Etalon Alignment Award,* Todd Major.

The "Senior Chemical Education Award" went to Christina Billman, The "Inorganic Chemist Award" went to Renee Bouley, and the "American Institute of Chemists Award" went to Randall Breckon. The winner of the "Outstanding Senior Award" was Kirk Wyatt.

Chemistry Department Honors Students

In April of 2010, the chemistry department honored many of its most outstanding students for the 2009/2010 academic year. A total of nine awards in various categories were granted. The award winners in the different categories were the following.

Outstanding Freshman Award: *Luke F. Gray* was the recipient of this award, which recognizes a student who must have completed CHM 115 and is either enrolled in or must have completed CHM 116 by the end of the current academic year. In addition, an eligible student must have fewer than 25 earned credits. The award recipient gets the CRC Handbook of Chemistry & Physics.

Outstanding Sophomore Award: *Jonathan W. Lehmann* was the recipient of this award, which recognizes an outstanding student who must have completed CHM 245-248 by the end of the current academic year. In addition, an eligible student must have fewer than 55 earned credits and be a declared chemistry major. The benefits of this award include a $50.00 University Bookstore gift card and one year student affiliate membership to the American Chemical Society (ACS).

Outstanding Junior Award: The recipient of this award was *Luan T. Nguyen*. To be eligible for this award, a junior must be a declared chemistry major with at least 30 credits of chemistry completed, and have fewer than 85 earned credits. In addition, a junior must be enrolled in CHM 358 and 355. The benefits of this award include a $50.00 University Bookstore gift card and one year student affiliate membership to the American Chemical Society (ACS).

Outstanding Senior Award: *Kirk D. Wyatt* was the recipient of this award, which recognizes a graduating senior with an overall GPA of 3.5 or greater. Other eligibility requirements for this award are: research participation; service to the department; chemistry-related extracurricular activities; and general attitude. The benefits of this award include a $1000.00 University Bookstore gift card and one year student affiliate membership to the American Chemical Society (ACS).

American Institute of Chemists Award: *Randall K. Breckon* was the recipient of this award, which recognizes a graduating senior who meets all or most of the criteria for the Outstanding Senior Award. The benefits of this award include a $75.00 University Bookstore gift card, one year student affiliate membership to the American Chemical Society (ACS), and one year student American Institute of Chemists (AIC) membership.

Outstanding Analytical Chemist Award: *Jody Wycech* was the recipient of this award, which recognizes a declared chemistry major who is outstanding in CHM 222. This award comes with a benefit of one year subscription to Analytical Chemistry Journal.

Organic Chemist Award: The recipient of this award was *Kirsten C. Tissue*. The award, sponsored by PolyEd (the polymer education committee of the A.C.S.), is given to a student whose overall GPA is greater than 3.3 and whose performance in the two semester Organic sequence is outstanding. The benefits of this award include a $50.00 University Bookstore gift card and an award letter & certificate from ACS PolyEd.

Senior Chemical Education Award: *Christina M. Billman* was the recipient of this award, which is given to a graduating senior who is a Chemical education major.

Inorganic Chemist Award: *Renee A. Bouley* was the recipient of this maiden award, which is given to a graduating senior with great potential to pursue research in inorganic chemistry.

Student Scholars Day 2010

More than a dozen Chemistry students presented their research results in either oral or poster form at the 15th Annual Student Scholarship Day in April 2010. Student scholars and their sponsors were the following:

Ryan Nelson. "Capillary Isoelectric Focusing of Bacteria Using Cellulose Coated Capillaries". Sponsor: *Andrew Lantz*

Caleb Ortega. "Mutagenesis of OXA-40". Sponsor: *Dave Leonard*

Derek Bent, Jessica Butler, and Loren Jordan. "A Statistical Consulting Experience: Success in CHM 116 based on CHM 115". Sponsor: *Tom Pentecost*

Samantha Seaberg. "Characterizing the Cellular Regulation of the Diaphanous-related Formin, mDia3, by Expression of the Constitutively Active Full-length Protein". Sponsor: *Brad Wallar*

Todd Major and Luan Nguyen. "Diode-Laser-Based Measurement of a Fundamental Molecular Parameter: The Pressure Broadening Coefficient". Sponsor: *George McBane and Stephanie Schaertel*

Michael Schillaci-Schofield. "Characterizing the Regulation of the Diaphanous-Related Formin, DAAM1, by Expression of the Constitutively Active Full Length Protein in Cells". Sponsor: *Brad Wallar*

Jacob Luker. "Computational Pharmacophore Discovery to Aid in the Synthesis of New MRSA Antibiotics". Sponsor: *Mary Karpen*

Nathaniel Strong. "Cyclic Polyamides as Telomerase Inhibitors". Sponsor: *Bob Smart*

Shane McGrath. "Conversion of Cellulose to Value-Added Chemicals". Sponsor: *Dalila Kovacs*

Anthony Montoya and Ben Thome. "Investigation of Phosphorus - Nitrogen Polymers". Sponsor: *John Bender*

Felix Boucher. "Development of Novel Chelating Agents Used in MRI's". Sponsor: *Shannon Biros*

James Ruble. "Effects of Asn152 Mutation on Substrate Selectivity of P99 Cephalosporinase". Sponsor: *Rachel Powers*

Mehreteab Mengsteab. "Effects on Substrate Selectivity due to Asn152 Mutation of P99 Cephalosporinase". Sponsor: *Rachel Powers*

Michael Ostach. "Efficient Catalytic Systems for the Cross Coupling of 2'-Deoxyguanosine Tosylates with Terminal Alkynes". Sponsor: *Felix Ngassa*

Luan Nguyen. "Energy Distribution in the Triplet Channels of Ozone Photodissociation". Sponsor: *George McBane*

Kirk Wyatt. "Evaluation of Non-radioactive Luminescence Assays for Protein Kinase Activity". Sponsor: *Laurie Witucki*

Amanda Hanks. "Expression, Purification and Characterization of the Asn152Thr Mutant P99 Cephalosporinase". Sponsor: *Rachel Powers*

Kaitlyn Driza. "Forging the Missing Link Between Sustainability and Green Chemistry". Sponsor: *Dalila Kovacs*

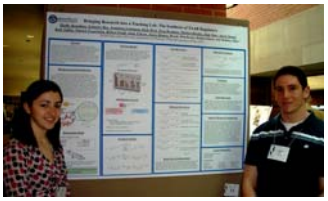
Jamie Gomez. "Investigating Efficient Catalytic Systems for Coupling 2'-Deoxyguanosine Mesitylene Sulfonate with Terminal Alkynes". Sponsor: *Felix Ngassa*

Randall Breckon. "Investigation of the Silaallyl Anion". Sponsor: *Randy Winchester*

Kaitlin Downey. "Modeling Problem Solving: Creating and Evaluating Student-Generated Screencasts". Sponsor: *Nathan Barrows*

Ryan Enck. "Progress Towards an Efficient Synthesis of a Truncated Ergoline: The Development of TAAR Regulators". Sponsor: *Matthew Hart*

Kevin Maupin. "Synthesis of Novel Indane Derivatives as Regulators of TAAR Activity: An Updated Approach". Sponsor: *Matthew Hart*



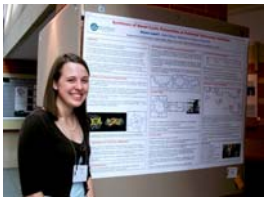
Jody Wycech. "Quantification of Antibiotics in Water". Sponsor: *Min Qi*

Nicole Gibbons. "Silicon in Wonderland". Sponsor: *Randy Winchester*

Alvina Qureshi. "Synthesis of Calix[4] Furan Derivatives". Sponsor: *Shannon Biros*

Patrick Louden. "Water Evaporation From Tropospheric Aerosols". Sponsor: *Christopher Lawrence*

Alyssa Lopez. "Synthesis of Novel Cyclic Polyamides as Potential DNA-Interactive Agents". Sponsor: *Toni Rice*



Aleks Archiyan, Kathleen Bedard and Megan Childers. "The Antibacterial Activity of a Variety of Carboxylic Amides". Sponsor: *Toni Rice*

Departmental Research Update

The Chemistry Department has consistently maintained as its priority research endeavor that involves the active participation of undergraduate student researchers. Many faculty members attended regional and national meetings to present work accomplished with their undergraduate research co-workers. A summary of some faculty research update is presented.

Nathan Barrows continues his research into the development of student conceptual understanding. An NSF-TUES Phase I proposal entitled "Collaborative Research: Advancing Chemistry by Enhancing Learning in the Laboratory (ACELL)" has been recommended for funding. Collaborating institutions include GVSU, UNLV, Purdue, CSUFullerton, and University of South Florida. The primary goal of the project is to evaluate an Australian model of professional development for R1 general chemistry lab instructors and coordinators.

Cory DiCarlo is currently working hard with the green chemistry group on the first of three years of a new grant from the Department of Natural Resources. The Green Chemistry Online Clearinghouse Grant ($585,000) will focus on the development of a centralized online resource for green chemistry educators, legislators, and industry professionals. Cory is also presenting results in October from research completed over the summer with Grand Valley students Greg Kortman and Katie Hekstra. These talks will take place at the fall national meeting of the Electrochemical Society in Las Vegas, Nevada, and at the 2nd Annual Michigan Green Chemistry Conference, Michigan State University, East Lansing, Michigan. This research represents continued investigations on catalysis in non-terrestrial environments and a new project involving microbial fuel cells that produce electricity from municipal waste water.

Debbie Herrington continues her research on Target Inquiry (TI). This summer a third cohort of high school chemistry teachers conducted research with our chemistry faculty as part of the Target Inquiry professional development program. The project directors, Deborah Herrington and Ellen Yezierski, attended the 2010 Biennial Conference on Chemical Education in Denton, Texas with six of the Target Inquiry teachers from the second cohort. Each of the teachers presented one of the inquiry classroom activities they developed last summer to a packed symposium. Additionally, two of the teachers also presented their action research. The teachers work was extremely well received. During the panel discussion following the inquiry activities presentations one attendee commented that this symposium was worth the cost of attending the conference. The teachers' work and more information about the Target Inquiry program can be found at www.gvsu.edu/targetinquiry.

Andrew Lantz's research this year has focused on two areas: 1) the extraction of pesticides from soil via cyclodextrin complexation and 2) the identification and separation of microorganisms using capillary electrophoresis. Last summer the Lantz group developed a method for the detection of Candida albicans fungi in patient blood samples using CE, and this work was recently published in a peer-reviewed journal *Electrophoresis*. A review on CE based microorganism analysis will also appear in the next volume of the Pharmacopeial Forum. Last winter, Ryan Nelson, an undergraduate research student in the Lantz group, presented his work on "Capillary Isoelectric Focusing of Bacteria Using Cellulose Coated Capillaries" at the 239th Spring ACS national meeting in San Francisco, CA. Another project in the Lantz group, pesticide project, is also nearing completion and the group hopes to publish the data within the next year. Former undergraduate research student, Michael Delamarre is attending Chemistry graduate school at the University of Illinois in Chicago this fall. In collaboration with Dalila, Min, and Cory, Andrew organized and hosted the 2nd MI Green Chemistry Education Conference in April. Also, a collaborative grant was received to develop an online statewide green chemistry database.

Departmental Research Update

Christopher Lawrence has a collaborative NSF grant that has now been recommended for funding ($300,000). The funds will be used to purchase a computer cluster that will be housed at Hope College.

Dave Leonard and his students Caleb Ortega, Stephanie Pavlish, Aaron Lloyd and Luke Ulberg continued their research on beta -lactamase enzymology and bacterial resistance to beta-lactam antibiotics. Additionally, student Nick Hefferan presented a poster of his work at the ACS meeting in San Francisco last March.

George McBane received a National Science Foundation grant for $49,821 for a project entitled "RUI: Theoretical study of the removal of triplet Herzberg states of oxygen by collisions with nitrogen", for the period August 2010 – July 2012. George also published five papers in the *Journal of Chemical Physics* and the *Journal of Physical Chemistry A*. One of these papers, "Photodissociation of ozone in the Hartley band: Product state and angular distributions", published in the *Journal of Chemical Physics*, had undergraduate student Luan Nguyen as a co-author. Luan Nguyen is a GVSU Chemistry/Math major, who was working with MSGC and Ott Scholars Program support.

Felix Ngassa continues his research on transition metal-catalyzed syntheses of modified nucleosides. The Ngassa group presented research results at the 239th spring ACS national meeting in San Francisco, CA, and had a peer-reviewed publication with undergraduate students, Jamie Gomez, Brandon Haines, Michael Ostach, Jared Hector, Lindsay Hoogenboom and Chelsea Page, published in the journal *Tetrahedron* 2010. Two other peer-reviewed publications based on collaborative work have been submitted. Most recently, the Ngassa group has been involved in two new areas of research; Asymmetric Synthesis and Development of Novel Polymeric Nanomaterials for siRNA Interference. This fall, the Ngassa group is welcoming three new co-workers.

Toni Rice and her research group are interested in developing molecules that can bind to DNA. They are currently working on two projects: (1) The synthesis of linear molecules to bind to duplex DNA as potential gene targeting agents and (2) The synthesis of cyclic compounds to bind to four-stranded DNA as potential anti-cancer agents. Toni, who is in her third year at GVSU, is having so much fun with her research group as she affirms in the following observations. "The Rice group had a productive summer, even with a few technical issues, like the rotavap breaking, the acid chloride station not pulling a vacuum and a couple of chemical mix-ups. There is a big difference between TEA and THF!! But each student made significant progress and the group is hoping to attend the South East Regional Meeting of the American Chemical Society in New Orleans (Nov 2010) to attend the DNA symposium and present their findings. Toni was also awarded a $400 mini-grant to purchase some equipment to further a solid-phase element to the project. The sad news is that the group will be saying goodbye to Nate Strong. Nate has worked with the Rice group for the last year and has struggled with some uncooperative reactions. He battled on, and on his second to last day, he put on a final reaction to make the first final compound of the group! Mike Agius is now frantically purifying the reaction products to see if the reaction was successful. Everyone has got their fingers crossed!! Nate is off to Stanford to pursue a Ph.D. in Environmental Engineering and will be missed. The Rice group thanks him for his hard work and wishes him every success," Toni said.

Stephanie Schaertel worked with students this academic year on construction of a diode-laser-based spectrometer for the measurement of molecular line broadening parameters. This project is done in collaboration with George McBane (progress on this project is slow but steady). In the summer, student interest shifted to her other project, which involves the use of a homebuilt modular Raman spectrometer for applications in biochemistry and environmental studies. Recently, she and her students started an attempt to characterize ice samples with this instrument. One Target Inquiry teacher and one student worked on this project during the summer.

2009 Distinguished Alumnus-in-Residence

The CLAS Distinguished Alumni-in-Residence Program is an opportunity for various departments in the college to invite outstanding alumni to visit GVSU and share their post-graduation experiences with students, faculty, and staff. Our department's Distinguished Alumnus-in-Residence for 2009 was Dr. Todd Davis, Assistant Professor of Chemistry at Idaho State University. Dr. Todd Davis graduated from Grand Valley State University in 2000 with a BS in Chemistry. During his time at GVSU, Dr. Davis performed research funded by the Ronald McNair Post Baccalaureate Program. Dr. Davis obtained his Ph.D. in organic chemistry from Texas Tech University in 2004. Upon obtaining his doctorate, he was awarded a NIH training grant to conduct post-doctoral research at the Center for Molecular Toxicology and the Departments of Chemistry and Pharmacology at Vanderbilt University in Nashville, TN. While at Vanderbilt, Dr. Davis studied the effects of fish oil omega-3 fatty acids as antioxidants and their role in preventing lipid oxidation. He started his independent career at Idaho State University in 2007. His current research interests are in the areas of organic synthesis and agricultural/environmental chemistry.

Department Faculty News

Sebastian Ngassa

Dominic Ngassa

John Gracki has officially retired from GVSU Chemistry Department after more than 20 years of distinguished service.

Dalila Kovacs is on sabbatical leave for the 2010-2011 academic year.

Christopher Lawrence earned tenure and was promoted to associate professor. He is planning to take his sabbatical leave next year.

George McBane was promoted to full professor. In addition, he received a National Science Foundation grant for $49,821 for a project entitled "RUI: Theoretical study of the removal of triplet Herzberg states of oxygen by collisions with nitrogen," for the period August 2010-July 2012.

Felix Ngassa and his wife had twin boys, Sebastian Nyuangem Ngassa and Dominic Ngesi Ngassa, on June 12, 2010.

Harvey Nikkel is on sabbatical leave for this fall semester 2010.

New Faculty 2010-2011

There is no new tenure track faculty this year. However, two tenure track faculty, **Jaime Curtis-Fisk** and **Ellen Yezierski**, resigned from GVSU to pursue other opportunities. There are three new visiting instructors joining us this fall; **Wilson Okumu** (Ph.D. in Biochemistry from Western Michigan University, teaching CHM 115)**, John Saddler** (Ph.D. in Organic Synthesis from Purdue University, teaching CHM 109)**,** and **Michael Short** (Ph.D. in Biological Chemistry from the University of Illinois Medical School, teaching CHM 109). New adjuncts are: **George Akom, Isil Kayiran, Amanda Potter**, and **Lucas Snider**.

Chemistry Department Wins Green Award

On September 24, 2009, the Detroit Institute of Arts was the venue for awards program recognizing innovation in green chemistry in business, public sector and education. The Chemistry Department at Grand Valley State University was the recipient of the Michigan Green Chemistry Governor's Award for green chemistry integration in the university curriculum. Nathan Craft, a GVSU chemistry major working in the research lab of Dr. Dalila Kovacs, was selected as the student winner for his research project. According to Dr. Kovacs, Grand Valley is leading the way for green chemistry education in Michigan. "The curriculum includes a strong environmental chemistry education, two green chemistry courses, and the inception of a certification in green chemistry that is still in the review stages," said Dr. Kovacs. Reflecting on the evolution of green chemistry at Grand Valley, Dr. Kovacs noted that the university is very cooperative and is a great partner. "It is important that our students have a hands-on experience to go along with the theory and concepts that they learn in the classroom. Grand Valley has an advantage because we have the resources that allow students to have that experience. Students who receive a certification in green chemistry will have a competitive edge over other graduates looking for jobs," said Dr. Kovacs. Dr. Min Qi, a collaborator on the green chemistry initiative, concurs with Dr. Kovacs. "We are seeing more students becoming interested in the environmental chemistry program. Students see the importance that green chemistry has gained throughout the world and the increased support it has from the government," said Dr. Qi. Other faculty collaborators on the green chemistry initiative are Drs. Cory DiCarlo and Andrew Lantz.

Pictured, top row from left, are Cory DiCarlo, Andrew Lantz, Todd Carlson; seated from left, Dalila Kovacs and Min Qi.

GVSU Hosts the 2010 Michigan Green Chemistry Education Conference

The second annual Michigan Green Chemistry Education Networking Conference was held at Grand Valley State University on Friday April 30th. Educators and chemists from across the state of MI attended the conference, which was held in the GVSU Kirkhof Center. The morning session consisted of several speakers from different fields of green chemistry. Kathe Hetter, Science Curriculum Lead Teacher at Skyline High School in Ann Arbor, gave the first presentation of the conference. Kathe's talk highlighted the work she and her colleagues have done implementing green chemistry into the high school curriculum. The second speaker during the morning session was Carol Higginbotham of Central Oregon Community College. Carol, who received a BA in Chemistry from Central College in Iowa and a Ph.D. in Biochemistry from Montana State University, has been actively involved in the green chemistry community at the local, regional and national levels since 2003. Her presentation was focused on her work to implement green chemistry into the general organic and biochemistry (GOB) sequence at Central Oregon Community College as well as contributing to Oregon's online green chemistry database. The final speaker of the morning session was Justin Roberts, of the Environmental Protection Agency (EPA). Justin works as a chemist for the Industrial Chemistry Branch of the Office of Pollution Prevention. Justin, who is an alumna of the GVSU Chemistry Department, obtained her Ph.D. from Princeton. In his talk, Justin highlighted the work the EPA has done to reward companies and organization for their progress towards green chemistry through grant awards. The afternoon session consisted of informal discussions in groups led by experts in field of green chemistry. Robert Lehmann, of Saginaw Valley State University and the Department of Natural Resources and Environment, led a group on green/environmental education courses. Clinton Boyd of the Sustainability Research Group led a session on green business and non-profit work, while Michelle DeWitt of GVSU Chemistry Department discussed green chemistry laboratory and stockroom management. Support for the MI CGE Conference was provided by the MI Department of Natural Resources and Environment. For more information on this year's MI GCE Conference, please visit http://webmo.chem.gvsu.edu/greenchem/.

Chemistry Department Instrumentation Update

The Chemistry department did not make any major instrumentation purchases this year but focused on maintaining the equipment we already have. The department has, however, managed to obtain an MS detector by way of an instrument trade with Annis Water Resources Institute. The Finnigan Navigator single quadrupole mass spectrometer is from an LC/MS system and includes a Peak Scientific nitrogen generator and Edwards roughing pump. The instrument utilizes two ionization techniques, electrospray (ESI) and atmospheric pressure chemical ionization (APCI). Using funds from the Dean's office, the MS was installed, calibrated, and found to give good mass spectra. It is currently being interfaced to an Agilent 1100 HPLC so that we will have full LC/MS capability. The LC/MS will nicely compliment the capabilities of our GC/MS and broadly expand the types of compounds that can be studied.

Usage of NMR instrumentation continues to increase. Several of the new faculty have had very active research groups and have increased research use of the NMRs. The physical chemistry laboratory has also been using the Varian for several experiments. To help accommodate the increase in traffic, upgrades and repairs were made on both instruments. The JEOL NMR is now 10 years old and continues to yield excellent data, but discussions have begun about writing grants to replace it with a new instrument. This summer, in addition to routine checking of the instrument's electronics, the probe was sent back to Japan for repair of the thermocouple which had broken. The Varian NMR is just a few years younger than the JEOL. An upgrade was made to the Varian in which the original VNMR software running on a SUN computer was updated to VNMRj, a new version of the software running on a Dell computer with a Linux OS.

The department also has access to additional interdepartmental equipment. A scanning electron microscope (SEM) has been installed in the Geology department and a microbalance in the Biology department. The SEM is an AMRAY 1600 and is capable of energy dispersive X-ray spectroscopy being equipped with a Kevex EDS. The SEM has the ability to produce signals that contain information about the sample's surface topography, elemental composition and other properties such as electrical conductivity. The microbalance is a Mettler XS3DU capable of six decimal place precision (1 microgram readability).

GRAND VALLEY STATE UNIVERSITY

Chemistry Department
312 Padnos Hall
1 Campus Drive
Allendale, MI 49401