2009 Alumni File Update

What's \vee (nu) With You?

Name		_Date
Address		
Class Year	e-mail	

Fill us in on what's happening in your life. New address? E-mail address? Home page? Married? Children: change employment: Further education? Degree? Hobbies? Trips? Awards? Prospective student to recommend for Augustana? If you find that any of the information mentioned in this newsletter is inaccurate, please let us know.

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e-mail address & phone numbers

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Augustana

Augustana College Sioux Falls, SD 57197

Department of Chemistry Alumni pHilter

Spring 2009 http://ed.augie.edu/~chem/

Jetty L. Duffy-Matzner - Department Chair

I hope the 2009 finds all of our readers in good health and bright spirits. It is a wonderful but amazingly challenging



year to be the chair of the Augustana College Chemistry Department. We have conducted 4 searches this past summer and fall to find a visiting medicinal chemist, our stockroom and NMR coordinator, and two tenure track faculty positions. Currently we have 5 tenure track professors, one visiting assistant professor, a lab instructor, our stockroom and NMR coordinator and our office manager staffing the chemistry department. We are also busy with plans for the expansion of the Gilbert Science Center which may be delayed by the current economic climate. The American Chemical Society has also published new and exciting guidelines for the ACS chemistry major. So it truly is (as always) a GREAT TIME TO BE AT AUGIE and a very exciting time to be in the chemistry department!

My research group has expanded to examine the pursuit of a "Greener" methodology for the Henry reaction in the pursuit of nitroalcohols and nitroalkenes. We are hoping to broaden this work to

include the formation of the ISNC (Intramolecular Silyl Nitronate Cycloadditions). There were five students in my research group this past summer. Shik Ki Li is from Hong Kong and he will be graduating this year to attend pharmacy/Ph.D. graduate studies. He and Katie Hassebroek (junior) completed the study of a reaction with the ISNC that examined regioselectivity of alken-yl nitroethers. We hope to publish this work started by Matt Grandbois (Fullbright Graduate Scholar in Norway) soon. Shannon Cumiskey (junior) examined the mechanistic pathways for the ISNC reaction based on the work of Heidi Reuter (U of Minn – Pharm/Ph.D. graduate studies), Jamie Horter (senior) and Christina Stangl (Medical School). Rachel Hurley (sophomore) and Amanda Hammers (senior) further explored the production of a amine modified silica gel based upon the work of Will Buchanan (Syracuse University – Ph.D. graduate studies). Rachel and Amanda were this year's winners of the Sioux Valley Local Section Undergraduate Poster Contest and as a result won funding to attend and present their research at a national ACS meeting! Rachel was also one of 15 students in the nation selected to participate in the Leadership Institute this past January in Fort Worth, Texas.

I am thrilled to have the chance to work with the Student Affiliates at Augustana College for the past ten years. We will travel to Salt Lake City in mid March to pick up two national awards for our student group –7 students will be presenting their work at this National ACS meeting. I am also chair of the Awards Committee for the Midwest ACS Regional Executive Board. I am keeping Augie involved at the national ACS level with my role as chair of the Local Section Assistance and Development Subcommittee, Chair of the Speaker Service and a member of the Executive Board for the Local Section Activities Committee. I am keeping busy reviewing and writing proposals and in my spare time I am working on two committees of the Division of Chemical Education on the ACS Exam's Institute for both general chemistry and organic chemistry national standardized finals.

My husband (Steven Matzner, Chair of Biology) is amazingly supportive of my work here at Augie and as a volunteer with the American Chemical Society. It helps that I buy him lots of chocolates during all conference travels. Our family

is coping with the rigors of two chairs responsibilities. Our boys are keeping us very busy in the spare time that we try to call a life with their school-work (i.e. all that homework that they should have finished in class but were reading instead), martial arts, plays and musicals, choirs and chess club. Steven and I are going to take our boys to Disney World this summer and are really excited at the chance to show them the ocean and enjoy some cool rides!

If you are ever in town and would like to visit our department, I would be more than delighted to meet with you and show you how the department is growing. As I mentioned before it is an exciting time to be in the chemistry department at Augie – come give us a chance to share that excitement with you!

Barrett Eichler



Dr. Barrett (Barry) Eichler was born and raised in the St. Cloud, MN area. He attended St. Cloud Cathedral High School (class of 1989) and graduated with a B. A. in Chemistry from the University of Minnesota-Morris. He also met his wife Kathy (from Litchfield, MN) at Morris and when they graduated in 1993, they moved to Madison, WI. Barry received his Ph.D. in Inorganic Chemistry from the University of Wisconsin-Madison in 1998, where he studied under Dr. Robert West. His thesis was entitled "Novel Group 14 1-Heteroallenes." Barry and Kathy then moved to California for two years where Barry worked with Dr. Phillip Power at the University of California-Davis. Missing the Midwest, Barry and Kathy then spent one cold year in the Fargo-Moorhead where he taught at Minnesota State University-Moorhead. Then it was off to Missouri, where they spent seven years. Barry taught for seven years at Northwest Missouri State University. Their first child, a daughter Madison (Maddie) was born in January 2008 and they moved to Brandon, SD in July

2008. Kathy works in Brandon and Maddie now attends the Campus Learning Center daycare.

Barry defines himself as a synthetic organometallic chemist with an emphasis in materials science. His research involves undergraduates in the synthesis and characterization of new luminescent materials for use in organic light-emitting diode (OLED) devices. He specifically focuses on a class of compounds called "siloles", which are organosilicon compounds that have interesting luminescence properties. Students in his labs have synthesized a number of precursors to siloles and are ready to create a series of novel siloles for study. When these siloles are aggregated into nanoparticles in solution, they exhibit intense fluorescence. Barry hopes to use this property to create silole sensors for particular metal cations and he also plans to incorporate the siloles into OLED devices. He has collaborators at the University of Iowa and Missouri State University.

In terms of his personal life, Barry enjoys spending time with his wife and daughter. He and his family like the outdoors, especially fishing, camping and morel mushroom hunting. They frequently visit a family cabin in the New London-Spicer, MN area. One small piece of trivia is that Barry's uncle is "Babe" Winkelman, a professional fisherman on TV. The Eichler household is Minnesota Vikings football territory and they also enjoy watching the Minnesota Wild and Twins. Barry frequently likes to grill/barbeque and experiment with food recipes as much as he likes to experiment with chemicals in lab.

Duane Weisshaar

It's hard to believe this is my 25th year at Augustana, partly because until recently I was pretty much "the new kid." But with several retirements over the last few years, I have become the "old fogie" in the Department. In spite of that, new faculty, increased research activity, and increased enrollments in Chemistry courses make this an exciting and busy time.



Gary Earl and I continue to collaborate on research with dimethyl carbonate (DMC) methylation of tertiary amines which provides a greener route to quaternary ammonium compounds and a cleaner route for exchanging the anion on the quat. Studies of the stability of the methyl carbonate, the kinetics of the reaction, and development of HPLC methods to follow the quaternization reaction are nearing completion and preparation of the resulting papers is in progress. In Summer 07 six students worked with us: Ben Jensen (Fr, Rapid City, SD), Nick Bleeker (Fr, Red Wood Falls, MN), Matt Schafer (So, Worthington, MN), Shik Ki Li (So, Hong Kong, China), Kyle Mickalowski (Sr, Sioux Falls, SD), and Paul Draayer (Jr, Sioux Falls, SD). In Summer 08 there were eight students in the crew: Adam Dittmer (So, Coon Rapids, MN), Natalie Ronning (Fr, Rapid City, SD), Rob Fick (Fr, Shenandoah, IA), Jeremy Erickson (Fr,

Lincoln, NE), Bethany Zogg (So, Albert Lee, MN), Connor Lamberson (Fr, Marshall, MO), Ashley Hanson (Fr, Sartell, MN), and Jordan Clark (Fr, Byron, IL). All these students presented their work at the Midwest Regional ACS meeting.

Supporting these research students in the summer continues to be a challenge. The Northern Plains Undergraduate Research Center (NSF grant centered at USD) has been a major resource for us, but it runs out in a couple years and is not renewable. Paul Draayer was the first recipient of the Viste Endowed Research Fellowship established by Dr. Greg and Karen Schultz to honor Arlen Viste at his retirement (thank you). But even before the economic downturn that endowment did not earn enough to fund a summer student every year. The Augustana Artists and Research Fund (ARAF) has funded a couple of students, but demands on that fund are increasing every year. Last summer a former colleague of Gary Earl who now works at Evonik-Goldschmidt funded a couple students to do a research project for them at Augustana. With the change in the economic picture, Evonik is not likely to continue that funding.

Fall 08 and I09 I was on sabbatical leave. During that time I put together a 3-year NSF proposal in an attempt to secure funding for our research. We should hear NSF's decision sometime this summer. Even though Gary plans to retire at the end of this year (08-09), he wants to stay involved in the research, so he is included as a co-PI on this proposal. In the remainder of the leave I worked on a couple of papers and spent some time in the lab to nail down some details. We hope to have at least one paper submitted before the end of the school year.

This fall the Department used funds from the Wright Endowment (designated for instrumentation purchases) to purchase a computer controlled voltammetry system. I haven't had much time to play with the new toy yet but I am excited about the opportunity. We are using it in Advanced Analysis this spring and eventually I hope to include it in our research. Our quaternary ammonium methyl carbonates qualify as ionic liquids which have a wide potential window making them candidates for electrochemical solvents.

Jared Mays



Jared R. Mays graduated from Gustavus Adolphus College with majors in Chemistry and Biochemistry. His undergraduate research was conducted with Gretchen E. Hofmeister and concerned the construction of chiral phenolic ligands. At The University of Wisconsin, he received a Ph.D. in Pharmaceutical Sciences for his work toward the development of prodrug histone deacetylase inhibitors under the direction of Scott R. Rajski. Since then, Jared has pursued postdoctoral research on *C*-terminal Hsp90 inhibitors with Brian S. J. Blagg in the Department of Medicinal Chemistry at The University of Kansas. Jared will be moving to Sioux Falls this summer and will be joining the Augustana faculty this fall. Jared's future research at Augustana will focus on the medicinal chemistry of glucosinolates and isothiocyanates, anti-cancer natural products found in broccoli. In his free time, Jared enjoys camping, reading, and spending time with his family.

Bijoy Dey

I am Bijoy Dey. I came to Augustana in October 2008. Recently, I have taught courses in advanced quantum



mechanics, physical chemistry, general chemistry and general sciences. My backgrounds, as well as my past and current research interests are multidisciplinary, which encompasses chemistry, physics, mathematics and computer programming. Prior to coming to Augustana, I have conducted research at various research Institutes, namely, Princeton University, University of Toronto, McMaster University, University of Waterloo and Institut fuer Theoretische Physik (Germany). My research interests are: determining reaction pathways of complex reaction, developing new approaches for studying molecular dynamics and quantum dynamics when Born-Oppenheimer approximation breaks down, Photochemical processes, controlling quantum dynamics, atom/molecule under laser field and, Bohmian mechanics for

quantum evolution. Currently, I am writing a book chapter on "Determining chemical reaction mechanism" which will appear in the book "Quantum Biochemistry: Electronic Structure and Biological Activity" published by Wiley.

I love spending time with my children. When my children are sleeping, I watch soccer and cricket, my all time favorite sports.

Gary Earl

It is somewhat bittersweet for me to write this note as I am retiring at the end of this academic year and this will thus be



a last greeting in any official capacity within the Chem Department. This fifteen year ride has been most rewarding for me both professionally and personally. It seems only yesterday that Roy Kintner was retiring after his very distinguished career at Augustana and I was somehow supposed to replace him! Impossible! But, hey, somebody has to do it, so why not I?

This current year I have had fun teaching Organic I and II as well as Medicinal Chemistry and Biochem (first semester) and Organic and Biochem for Health Sciences (second semester) plus an Advanced Organic course with a green emphasis during the J-term.

During those fifteen years I have seen a rather dramatic metamorphosis of this department. It has gone from "Modest Optimism" with a terrific record for placing students into graduate and professional schools but quite limited resources in terms of faculty and equipment to a rather adequate staff, really good instrumentation and certainly some of the best students ever! We still have a very challenging curriculum but now "research is our thing". Oh, sure, we have had NSF supported research here in the department for at least the last fifty years - I was one of those who enjoyed summer support in 1961! Faculty have been research active over the years but there have not been the numbers in the lab during the summer that we have had recently. In the last four years we have had between 15 and 19 each year. It takes a lot of funding sources to support those students to the tune of \$3,500 or \$4,000 per student plus monies for equipment, gasses and instrument maintenance. As everyone knows, it is difficult to obtain appreciable outside funding (NSF, ACS-PRF, even Research Corp) without a record of significant publication. Then it is difficult to publish without having significant data from appreciable research, so Catch 22. Luckily we have been part of the Northern Plains Undergraduate Consortium (NSF) and the Biomedical Research Infrastructure Network (NIH) to obtain funding for research the past several years. Thankfully, our teaching loads are a bit better so there is a little more time to pull together articles for publication and research proposals for future funding. We wait and hope.

Our research efforts with freshmen has allowed us to be very successful in recruiting future students to Augustana. In addition, we have instituted a new program that is designed to attract the best students. For a number of years we had a Regent's Scholars program which became the Distinguished Scholars Competition about 6 years ago. For all these good students, it seems like colleges are just in a 'bidding war' to lavish scholarship funds upon the individual. The net

result is that they accept the college offer that has the greatest dollar value. After reflecting on what we could do, I concocted a one-hour course for selected freshman chemistry majors who spend one hour per week discussing various professional opportunities. For example, the first week we might discuss graduate school, when to apply, what grades are important, what kind of GRE scores are needed, how to choose the university, etc. Another week we might discuss dentistry, medicine, pharmacy, forensic chemistry, chemical engineering, medicinal chemistry, or patent law. Then during the second semester they become 'junior' laboratory assistants, spending perhaps two hours per week to learn what a lab assistant does, where we keep chemicals and even how to run one or two of the major instruments, the FT-IR, FT-NMR (60 MHZ), etc. In a real sense these students become more valuable to the department for future lab assistants as well as summer research students. Each of the last three years we have had about 10 students partake in this program and about 5 to 7 of them are then taken on as summer research students right after their freshman year. We tell them if they get a 3.8 GPA their freshman year, we will almost guarantee them a summer research spot. With the new skills plus the coursework they have mastered, they are ready for research and we have seen them perform at a very high level during the past several summers. The course has a formal number, Chem 102. So far it has been a very effective recruiting tool which, in a very real sense, gives the student added value during their freshman year.

Zhihong Xu

My research covers the areas of organic chemistry, medicinal chemistry, biochemistry, drug delivery, and natural product chemistry. I received my first Ph.D. in natural product chemistry about ten years ago from the well-known drug research



institute in China, Shanghai Institute of Materia Medica, Chinese Academy of Sciences, conducting separation, structure elucidation and modification of novel bioactive compounds from anti-tumor medicinal plants. Later, I enjoyed the experience working as a Postdoctoral Research Associate in School of Pharmacy at the University of North Carolina at Chapel Hill (UNC-CH) and a consultant at Glaxo Wellcome Inc. (GW), Research Triangle Park (RTP), performing research on bioactive constituents from natural resources and drug delivery of anti-cancer agents. In May 2008, I obtained my second Ph.D. in organic synthesis and biochemistry at Duke University, with the training focus on the synthesis and property studies of nucleoside phosphate analogs. During my stay at this outstanding education institution, I have received training not only in science, but also in the areas

of music and art, which help to stimulate my active thinking in science. Shortly after my graduation from Duke, I joined Augustana College as a visiting assistant professor in the Chemistry Department, a very friendly and nice teaching environment. I enjoy everyday of my stay here. I love teaching as well as research. All teaching members here are hardworkers, and willing to help any time. I am proud of being a member of this family.

After many years of training and research work, I have published some research papers, and contributed one chapter (Chapter 13. Nucleoside) to the textbook "Extraction and Isolation of Bioactive Components from Medicinal Plants", third edition (language in Chinese), and another chapter (Chapter 3. Chemistry of Fungal Products) to the book "Introduction to Natural Products Chemistry" (language in English).

Brandon Gustafson

I received my Bachelor of Science degree in 2004 from North Dakota State University. As an undergraduate, I conducted



research on indium-mediated ene-yne cyclizations, as well as other smaller projects under Dr. Gregory Cook. Then in 2008, I earned my Masters degree also from NDSU under the direction of Dr. Mukund Sibi. My thesis project involved using a new achiral template to develop catalytic enantioselective and diastereoselective Diels-Alder reactions. More specifically, I developed 3-isoxazolidinone as a template to facilitate selective reactions of α -substituted acrylate systems. The results demonstrated excellent improvement or existing systems.

My primary training is in synthetic organic training with a focus in methodology. My academic interests however lie toward nuclear magnetic resonance spectroscopy. I gained significant

experience at NDSU working with Varian spectrometers and since coming to Augustana, I have taken the Chemistry Department's own 300MHz NMR under my wing. Currently, the instrument is capable of several 1D and 2D experiments, and has become a valuable resource for structure elucidation in both our teaching and research programs.

Diane Pullman



Diane Pullman is a chemistry laboratory instructor.

She began at Augie spring semester of 2008.

Diane earned her chemistry degree from the University of Nevada.

Prior to coming to Augustana, Diane had worked in industry for over 20 years doing environmental, pharmaceutical and governmental work. Her focus was on analytical chemistry.

Marlys Vant Hul



The Chemistry Department is very busy academically and with research We are also very student oriented. The summers used to slow down a little – but not any more, in many ways, we are busier than during the academic year. The research students are here everyday/all day. We don't share them with other departments like we do during the academic year. But, as I told a first year student today, who will be doing research with Drs. Earl & Weisshaar this summer, this is the time you move from being "a student" to becoming part of "the family." And, so we love it when you become alumni, if you would e-mail us, send us pictures, and especially when you stop and see us.

I am kept busy not only with my "Augie" family; but with grandchildren involved in basketball, track, cross-country, dance, gymnastics, plays, confirmation, etc. Some days I think I will be permanently stuck to a bleacher!

Sioux Valley Section American Chemical Society-Student Affiliate - Joseph Coppock, President

Throughout the 2008-2009 academic year, the Augustana College Student Affiliates of the American Chemical Society (SAACS) have continued their dedication to service, learning, sharing knowledge, and promoting and spreading the joy of chemistry to the community.

Roughly ten members presented their past summer's chemistry research at the 237th National Meeting of the ACS in Salt Lake City, Utah over Spring break. These members were also in attendance to receive two awards on behalf of the Augustana chapter as issued by the national ACS: the green chapter award, which is highly selective and has been received three years running, and the commendable chapter award.

In other news, the Augustana SAACS recently toured POET research facilities, POET being a nationally well-represented ethanol company and among the most successful and profitable in the country. POET has been dedicated to replacing imported oil with clean, renewable domestic energy while bringing hundreds of millions of dollars back to the American economy and whose research facilities and headquarters happen to be located in Sioux Falls.



Augustana SAACS members with faculty advisor Dr. Jetty Duffy-Matzner on tour with Cristi Plack ,POET ResearchTM lab manager.

The Augustana SAACS also recently received an invitation to speak with the sixth grade science club of Edison Middle School of Sioux Falls. The Edison Science Club is a group of students interested in future careers in science that hear from a scientist on their respective career and tour the speaker's work facilities at a later date. Three representatives had the privilege to speak with twenty or so sixth grade science students generally about careers in chemistry with emphasis on the rapidly expanding field of green chemistry. The middle school students later visited the Augustana Chemistry Department for a tour of the labs, brief overviews of prevalently used analytical instruments in chemical careers today, and also for a heralded SAACS chemical demonstration show.

Memorial Giving

Memorials are a great way of honoring the memory of a friend or relative. Many of you, give memorials to Augie. You can designate where you would like that memorial to be used. I have listed a few of them for you to consider when making a memorial/or blessing us with a monetary gift.

<u>Chemistry Assistant Award</u> – This award sponsored a monetary award recognizes **outstanding** laboratory assistants in chemistry who are nominated by their supervising professors and selected by the chemistry faculty. These students are normally seniors with 3 years assisting experiences.

<u>Viste Endowed Research Fellowship</u> – Dr. Gregory Schultz and his wife, Karen, established this fund to provide a stipend for a chemistry research student during the summer. The summer of 207 was the first year that we could support a student and Paul Draayer, from Sioux Falls Christian High, was the recipient and he did research under Dr. Gary Earl & Dr. Duane Weisshaar. This past summer, Shik Ki Li, from Hong Kong, work with Dr. Jetty Duffy-Matzner for his research and this summer 2009, Jeremy Erickson from Lincoln, NE, will work with Dr. Barrett Eichler.

The Chemistry Student Travel Fund – This fund uses money raised from selling Chemistry Laboratory Manuals to the students. It sponsors student to present their research at various regional and national meetings. The last week of March, Dr. Jetty Duffy-Matzner and 7 students flew to the National American Chemical Society Meeting in Salt Lake City, Utah, where the students presented the research conducted last summer.

<u>The Chemistry Gift Account</u> – This fund is used to purchase or repair special instruments, etc. when the general fund is inadequate.

As always, we want to thank everyone for the various gifts that have been given our department and/or the college.

Chemistry Majors Student Scholarships 2008-2009

Missi St. Aubin (Sr, Marshall, MN)

Chemistry Department Endowed Scholarship Y.T. Johnson Pre-Medical School Scholarship

Arlen E. Viste Endowed Scholarship

Kristen Erdmann (Sr, Balaton, MN) Shik Ki Li (Sr, Hong Kong) Jamie Horter (Sr, Bristol, SD) Christopherson Scholarship Christopherson Scholarship Ogden Dalrymple Scholarship Viste Chemistry Scholarship John T. Vucurevich Scholarship Thea Freed Memorial Scholarhip

Ashley Hanson (Soph, Sartell, MN)
Robert Fick (Soph, Shenandoah, IA)
Rachel Hurley (Soph, Canton, SD)
Elizabeth Day (Fresh, Vermillion, SD)
Matthew Schafer (Sr, Worthington, MN)
Bethany Zogg (Jr, Albert Lea, MN)

Sven G. Froiland Scholarship in Biology Sven G. Froiland Scholarship in Biology

Fryxell Scholarship

Gary E. Garrett Memorial Scholarship Richard J. Guderyahn Memorial Scholarship Lisa Malmin memorial Choir Scholarship Don & Phyllis Jerke Scholarship

Elliott Bloom (Soph, Rapid City, SD)
Joseph Coppock (Sr, Sioux Falls, SD)
Matthew Moldan (Jr, Lamberton, MN)

Y.T. Johnson Pre-Medical School Scholarship
Y.T. Johnson Pre-Medical School Scholarship
Mayfield-Skartvedt Chemistry/Music Scholarship
Y.T. Johnson Pre-Medical School Scholarship

Matthew Schafer (Sr, Worthington, MN)
Neal Gregerson (Fresh, Sioux Falls, SD)
Amanda Jundt (Fresh, Aberdeen, SD)

Y.T. Johnson Science Day Scholarship Y.T. Johnson Science Day Scholarship

Amanda Jundt (Fresh, Aberdeen, SD) Michael Stutelberg (Jr, Woodbury, MN)

Thrivent Financial For Lutheran Endowed Scholarship

Alex Johnson (Sr, Storden, MN) Katie Hassebroek (Jr, Little Rock, IA) Connor Lamberson (Soph, Marshall, MO) John Saetveit Memorial Scholarship Lloyd & Annelotte Svendsbye Scholarship Marion Thompson Memorial Scholarship

Trent Anderson (Soph, Jasper, MN)

Elizabeth A. Viste Endowed Scholarship

Chemistry Awards

Chemistry Assistant Award

Kara Becvar, Rochelle Boote, Ben Bomstad, Chris Fry, Tom Lynch & Collin Taphorn Joe Coppock & Lauren Cartmill Huy Nguyen & Rachel Hurley Tom Lynch, Rochelle Boote, Kyle Mickalowski Matthew Moldan

Analytical Chemistry Award CRC Freshman Award Merck Index Award Organic Chemistry Sioux Valley Section Outstanding Chemistry Graduates

Chris Fry & Kyle Mickalowki

Honorable Mention Kara Becvar, Ben Bomstad, Paul Draayer,

Tom Lynch & Rochelle Boote