



Department of Chemistry and Biochemistry

St. Cloud State University

2015 Newsletter



***PROVIDING A STIMULATING,
INTELLECTUAL ENVIRONMENT
FOR THE DISCOVERY,
INTEGRATION, APPLICATION,
AND COMMUNICATION OF
CHEMISTRY.***

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SCSU Department of Chemistry & Biochemistry Newsletter, 2015

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Old Wine in a New Bottle!



Chair Latha
Ramakrishnan

Envisioning the Future of the Department with a “Change is Inevitable, Growth is Intentional” Outlook

After taking a brief hiatus we are excited to bring to you this newly designed first edition of the newsletter from the Department of Chemistry & Biochemistry! Our new

name brings recognition to the reach of our Biochemistry program, which has grown to become a popular program with 64% of our 225 graduates in the last ten years. With the new name comes our self-imposed expectations to distinguish the Biochemistry program to a nationally accredited program!

In the past twenty months, there have not been many dull moments as initially I was immersed in learning the ropes of my very first quasi-administrative position in addition to writing and administering multiple federally-funded grants. Particularly, this year leading the program self-study work has been an educational yet challenging professional development exercise. Amidst this exciting and at times exhausting experiences, there have been many moments where I have realized how privileged and proud I am to be a member and leader of the department. Receiving the many heartening messages from our alumni recognizing the great work of our faculty and staff, and selection of Sarah Hopfner and Shruti Jagannathan to present at the prestigious Posters in St. Paul event, bestowment of Advisor of the Year award on Dr. Winter, invitation of Dr. Petitto to present a Master Class during convocation, and securing a paraprofessional residency program grant by Dr. Krystyniak have been some of those moments!

Our faculty members' efforts in securing over \$600,000 in federal funding in the last three years mostly to modernize and revitalize our instrumentation capabilities, holding at least one of their office hours in the COSE tutoring center in ISELF, engaging students in interactive learning pedagogies in class and lab, and the student-first approach of our staff are all testament to our commitment to provide one-on-one and hands-on educational experience to our students.

Often our students are unable to express their gratitude to the donors in person, however, they always write to us even after many years pushing us to continue to find opportunities to support them and to excel in all of our endeavors. Recently, we received support and two such wonderful messages: one from Peter Walsh, University of Alabama, Birmingham with tales of his inspirational association with David Sorensen when he taught at Roberts College in Istanbul, and another from Jessie Shipp, Airproducts, Inc. in Tempe, expressing her gratitude to the many scholarships she had received while she was an undergraduate student in the department.

As our alumni and donors, your continued support is vital for us in providing scholarship support to our students in addition to guiding them to build a successful career. Please consider contributing so you continue to make a difference!

Our graduates have gone on to make us proud in the many walks of life they have chosen to pursue. In this issue we are proud to showcase Liz Kuoppala, a chemistry graduate from the class of 1998, who is the Executive Director for the Minnesota Coalition for the Homeless, and Hailey Gahlon, a chemistry graduate from the class of 2007, who recently completed her graduate education at ETH Zurich in Switzerland, a leading international university in natural sciences and technology.

I sincerely hope that you like the many interesting stories in this issue and we would appreciate your feedback. Please post your comments on our Facebook page or send us an e-mail (chemistry@stcloudstate.edu).

Multiple Grants Fund Major Equipment Purchases for the Department

New equipment will be used to support the research activities of the department and give students hands-on experience with high-end instrumentation.

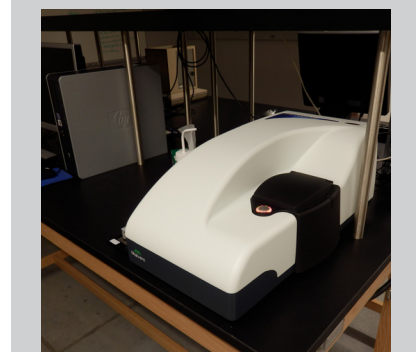
Faculty members in the Department of Chemistry and Biochemistry have recently received two Major Research Instrumentation (MRI) grants from the National Science Foundation (NSF). In July 2014, NSF awarded the department \$281,884 for the purchase of a new 400 megahertz Nuclear Magnetic Resonance (NMR) spectrophotometer. Access to a state-of-the-art NMR, which is one of the most powerful tools for elucidating molecular structure, is essential in many areas of chemical research, such as organic/inorganic chemistry, materials chemistry, and biochemistry.

In May 2014, NSF awarded a \$154,767 MRI grant for the purchase of a complimentary set of tools for the characterization of liquid suspended nanoparticles (colloids). The first tool, a Dynamic Light Scattering (DLS) instrument determines particle size and surface charge distributions in a colloidal sample. That information is then fed forward to the second tool, an AC magnetic Susceptibility (ACS) instrument that analyzes the same colloid sample and characterizes the particle magnetization distribution and magnetic switching behavior. The DLS will also be used for studying polymeric nanoparticles and derivatized silica nanoparticle research projects.

In addition to the NSF funded equipment, the department also installed a new High-Pressure Liquid Chromatography (HPLC) instrument in the summer of 2014 with funding from the College of Science and Engineering.

Beyond research activities, several undergraduate classes in chemistry and other departments will incorporate this instrumentation in their instructional laboratories. Furthermore, students at neighboring institutions such as North Hennepin Community College and local and regional industries will have access to the instrumentation.

This kind of scientific instrumentation plays a major role in providing a quality experience for students and preparing them for the work force. "We want our students to go on and work in industry as chemists in product development and product testing," Department Chair Latha Ramakrishnan said. "We need to have them exposed to this instrumentation so they are ready to do it."



New instrumentation shown clockwise from top right: The JEOL 400 MHz NMR for probing molecular structure, the DLS instrument that measures nanoparticle size distributions, the ACS instrument that determines nanoparticle magnetic properties, and the new Agilent HPLC instrument for separating complex mixtures.





New Master's Program Set to Launch in Fall 2015 *The program will equip students to become effective professionals and leaders in the field of materials science.*

As of Fall 2015, St. Cloud State University will be the only school in the state to offer a Professional Science Masters (PSM) program in the field of Materials Science and Instrumentation (MSI). The program will allow students to pursue advanced scientific knowledge and gain hands-on experience in the field of materials science while developing key skills in business, management, and marketing. The inter-disciplinary program focuses on material science and nano-technology from the viewpoints of chemical structure, composition, and instrumental characterization. In addition, courses in the program will provide foundations in communication and business skills, ethics, and manufacturing process and quality control. The graduates from this program will be (i) Interdisciplinary Scientists who can work at the interface of science and technology, (ii) innovative Problem Solvers who are capable of addressing challenges and opportunities in the real world, and (iii) Excellent Communicators who can serve as liaisons between corporate research groups and business administration.

Applications are currently being accepted for the inaugural Professional Science Masters in Material Science and Instrumentation (PSM-MSI) cohort class starting in fall 2015 (see www.stcloudstate.edu/graduate/psm-msi for more information). The program is open to recent graduates with a four-year degree in a science or engineering field and also to professionals with industrial experience. Pathways are also being created to facilitate the transition of current SCSU undergraduate students into the program. This includes the development of a 3+2 program, where students take 3 years of courses at SCSU before entering the program, and a new minor program in materials science.

The launch of the PSM program was spearheaded by two chemistry faculty, Dr. Kannan Sivaprakasam and Dr. Sarah Pettito, both of whom will also serve as the Graduate Directors for the program. As part of the preparation towards this launch, a new course on Polymeric and Composite Materials, along with a complementary 2-credit laboratory, was introduced in Spring 2015. The course, taught by Dr. Sivaprakasam, saw an enrollment of 11 students from a variety of majors. This variety is a good indicator of the potential interest in the program and its interdisciplinary nature.



Students enrolled in Dr. Sivaprakasam's polymer class making a visit to Boston Scientific to meet with industrial scientists.

ISELF Tutoring Center is a Huge Success *Chemistry students benefit from this exemplary program.*

Located across the street from the Department of Chemistry and Biochemistry is the new ISELF (Integrated Science and Engineering Laboratory Facility) Building. Opened in August 2013, ISELF is a multi-disciplinary student centered science facility that encourages collaboration, experiential learning and innovation (see <http://www.stcloudstate.edu/iself> for more info). In addition to various laboratory facilities and research spaces, the facility also provides a Tutoring Center for science, engineering, and math classes with funding from the College of Science and Engineering (see <http://www.stcloudstate.edu/cose/resources/tutoring/default.aspx>). The Tutoring Center's goals are to support both faculty instruction and student learning by providing academic assistance which reinforces and supplements the COSE interdisciplinary curriculum. Students also benefit from visiting one location to receive free help instead of multiple locations per departmental course. (*continued on next page*)

The Tutoring Center opened in fall semester 2014 and was an instant success. Over 1200 students were served by the center during the first semester alone, where 30% of the students served were minorities. Spring numbers also show a steady incline of usage, the word is out-- "The Tutoring Center works!" as 62% of fall students surveyed responded, "I believe my grades improved from the Tutoring Center."

For chemistry tutoring, the tutor center is staffed 9-4 pm, five days a week with peer tutors. To become a peer tutor, students must have successfully completed General Chemistry II with a B or better, undergone a training program, and

participate in bi-monthly meetings to discuss pedagogy and lecture content. Chemistry faculty, Dr. Sarah Petitto, supervises the training and coordination of the chemistry peer tutors.

In addition to peer tutors, nearly all of the faculty in the chemistry department spend at least one of their weekly office hours in the tutor center. Faculty have thoroughly enjoyed their time, getting to know their own students and students in other classes as well as advising and recruiting for the department. Dr. Petitto's Learning Assistants (LAs) in CHEM 210 and CHEM 211 also contribute to the success of the tutoring center with an additional 16 and 12 hours per week of tutoring, fall and spring respectively. The LAs priorities are to serve the CHEM 210 or 211 course, however, the LAs find themselves helping any and all students needing assistance.



Chemistry students working on assignments in the new ISELF tutoring center.

Community Ties are Strengthened with Outreach

Hundreds of area students, from elementary to high school, are engaged in science with the help of the department.

The Department of Chemistry and Biochemistry is highly active in numerous outreach activities that involve K-12 students and teachers in the St. Cloud community and surrounding areas. An excellent example of this community involvement is the Husky Volunteers for Science program. The program, led by Dr. Tamara Leenay and Dr. Mark Mechelke, takes teams of SCSU undergraduate students into elementary school classrooms to perform hands-on science experiments. During the past two years, the program has been visiting the fourth grade classrooms at Oak Hill Elementary. Approximately 32 undergraduate student volunteers and 120 fourth grade students participate in the program each semester.

The department is also heavily involved in the Central Minnesota Science Fair. This year's fair, the 65th annual, was held in the in Atwood Memorial Center on the SCSU campus and saw over 200 participants from area middle and high schools. Dr. Jack McKenna, who serves as the Fair Director, rolled out a new website for the science fair this year (see www.centralmnsciencefair.org). Other chemistry faculty involved in the fair include Dr. Mike Dvorak as Judging Director and Dr. Rebecca Krystyniak as Research Paper Director. Numerous SCSU chemistry students also served as judges in the fair. In addition to the science fair, the department also engages with high school students and teachers (*continued on next page*)



SCSU undergraduate student guiding an experiment on density and miscibility with elementary students at Oak Hill.



Chem Club performing a chemistry magic show and doing hands-on activities with kids.

through participation in SCSU's Senior to Sophomore program (see <http://www.stcloudstate.edu/continuingstudies/s2s>). The program is a partnership with area high schools that allows students to take SCSU courses at their high school. The courses are taught by the high school teacher with oversight by an SCSU faculty member. Seven different SCSU chemistry faculty participate in this program, offering introductory college chemistry classes to students at ten different high schools. To further strengthen the relationships with area high schools, the Chemistry Department also participates in an annual Teachers Night. In this event, area high school teachers are invited to the Chemistry Department for a tour of the facilities and to engage in presentations and discussions on science education.

When describing the outreach activities of the department, one absolutely can not leave out the Chemistry Club! Consisting of over 30 students with an interest in chemistry, the department's Chemistry Club is highly active in community outreach. Each year the club brings the excitement of chemistry to the community by performing chemistry magic shows and demonstrations for various groups. This year's outreach activities included seven different events at Lincoln Elementary, Annandale Schools, and the St. Cloud Public Library. In addition to their involvement in outreach, the club also engages its members in professional networking, fundraising, chemical education activities, and social events.

Student-Faculty Collaborative Research Stays Active

Involving students in research continues to be a focus and a strength of the department.

Engaging students in chemistry extends well beyond the classroom walls at SCSU. This becomes evident in the multitude of research projects that students carry out in collaboration with chemistry faculty each year. Students involved in this research are highly encouraged to present their work at local, regional, and national meetings and many also have the opportunity to publish their work in scholarly journals.

The department is proud that 21 chemistry students presented their research at both the 2014 and 2015 SCSU Student Research Colloquium (SRC). At the 2014 SRC, Rachel Murphy and David Gorman received the Denise M. McGuire Student Research Award for their research. In 2015, John Wade and Shruti Jagannathan received the McGuire Award while Scott Meyer, Sarah Hopfner, and Waideth Bio-Sawe received awards for their presentations at the SRC. In addition to the SRC, chemistry students Curtis Payne, Sarah Hopfner, and Shruti Jagannathan were selected to present posters at the prestigious Posters at St. Paul event, an undergraduate research conference held at the State Capitol, and chemistry student John Wade presented his work at the Spring 2015 ACS National Meeting.

Student-faculty collaborative research, two examples of which are highlighted in the next pages of this newsletter, allows students to garner experience with real-world applications of chemistry, become proficient at using advanced instrumentation, and develop critical thinking and data analysis skills. All of this better prepares the students to be successful as they go on to graduate school or pursue careers in the chemical industry.



Rachel Murphy and David Gorman receiving the Denise M. McGuire Research Award.

Faculty Research Highlights

Dr. Mark Mechelke - Synthetic Organic Chemistry



In my research laboratory, we are working on the development of novel chemotherapeutic agents that will selectively induce apoptosis in tumor cells. To create these compounds, we look at the structures of bioactive natural products. This is not an unusual strategy; natural products and synthetic derivatives of natural products make up over 60% of all cancer drugs used today.

An example of a natural product that we are working on in my laboratory is goniotalamin (1). Goniotalamin is a natural product originally isolated from the dried stem bark of trees and shrubs from the goniotalamus genus. In preliminary studies, goniotalamin has been shown to exhibit potent bioactivity (low micromolar IC₅₀ values) against a variety of different cancer cell lines. This activity illustrates that goniotalamin's structure could potentially be used as a template for chemotherapeutic drug design. By understanding goniotalamin's mechanism of action, we hope to design derivatives of the natural product that demonstrate even more potent cytotoxicity toward cancer cells.

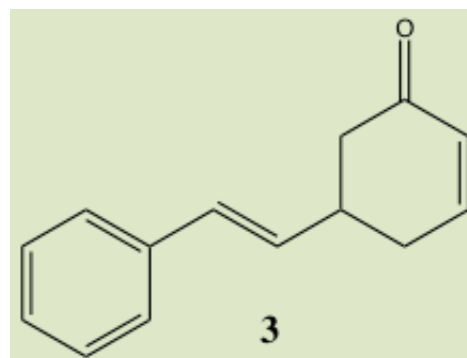
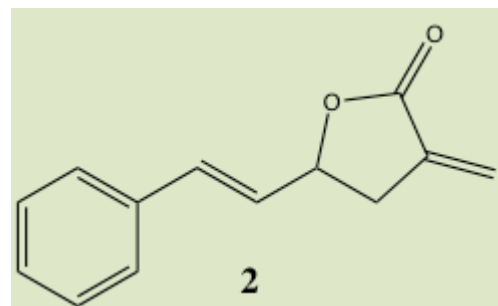
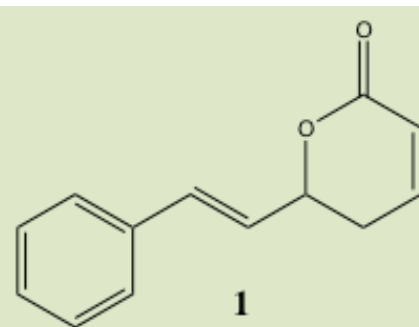
The past few years have been an exciting time in my research laboratory. Two novel analogues of goniotalamin have been prepared, one incorporating an alpha-methylene lactone (2) and one converting the lactone core of goniotalamin into a ketone (3). Both of these organic syntheses have been published

in peer-reviewed journals with ten undergraduate student co-authors. The research in my laboratory is very interdisciplinary. Students use their knowledge of biology and biochemistry to determine how the natural product inhibits tumor growth. They then use this information to design an analogue of the natural product, typically by altering either its steric or electronic properties. Finally, a synthetic scheme is developed and the analogue is prepared. All of the compounds made in the synthetic sequence are characterized using the NMR, GC-MS, and IR instruments.

What I love about my research is that it shows students how all of their science courses are related – cell biology, biochemistry, organic chemistry – they are all interconnected. Research also teaches students that textbooks and the internet do not hold all of the answers. Research is fun because many times the unexpected occurs, and that is what makes it so interesting.

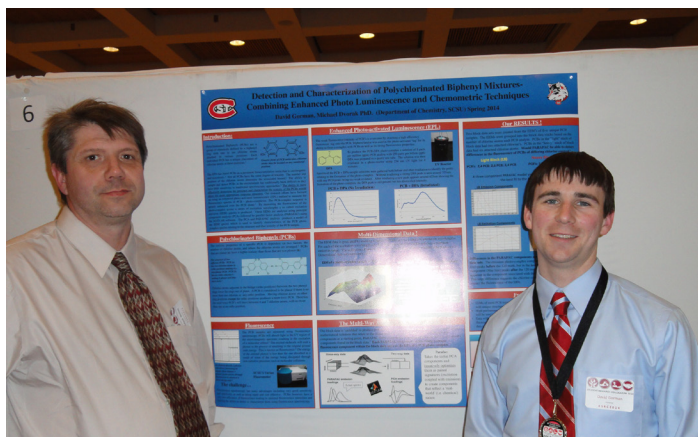


Student Researcher
Katy Platt





Dr. Michael Dvorak - Analytical Chemistry and Spectroscopy



Hello friends and graduates of the SCSU Department of Chemistry and Biochemistry.

The direction that my current research has taken begins with the fall of 2011. It was the year of my first sabbatical and a time to explore new areas of Applied Spectroscopy. It was also a time to take pause from teaching and academic chores. It started with a two-week trip to Germany to see friends and family, and a week-long retreat to Paris to sample its myriad of sites, culture, and cuisine. Upon returning it was time to pursue those new directions! That fall easily extended into December with mild temperatures and no snow. I recall thinking that

the greatest challenge would be staying indoors. Nevertheless I found the courage to pick up new books and journal articles, and pay extended day visits to the SCSU library (and a few area coffee shops). My ultimate goal was to better understand and employ emerging chemometric techniques to fluorescence spectroscopy.

Chemometrics combines mathematical and statistical approaches to analyzing large or multi-dimensional data sets using complex, but well-defined models of behavior. The immediate goal was to put together a chemometrics class that incorporated principles of data modeling and applied chemical statistics using Excel, Solver, and Matlab software packages. The class has been taught on a limited, overload basis. Teaching this class was refreshing, as it hones the subtle issues of a subject to a finer point of understanding.

Hyphenated 2D chemical techniques such as GC-MS or HPLC-diode array detection have the capability to measure both the time response of an analyte (chromatographic data), along with a signature spectrum (spectroscopic data). Seldom is the advantage of analyzing both aspects of the data simultaneously exploited. Conventional approaches to determining mixture composition invoke a chromatographic strategy, which unfortunately requires time and material. Many fluorescent mixtures have spectroscopic handles, that when fully realized, can be used to parse mixture components with minimal to no chromatographic separation. Both of these challenges have been the focus of several SCSU undergraduate capstone research projects arising from the sabbatical experience.

Recent examples have involved the analysis of polychlorinated biphenyls (PCBs) – environmentally relevant compounds that lack a fluorescence signature. By reacting PCB mixtures with diphenylamine in a UV photo-reactor, a photo-complex is formed that has a distinct signature. Combining this known approach with the gathering of full emission spectra at differing excitation wavelengths leads to an excitation-emission matrix data set. This can be repeated over a set of mixtures each containing a given concentration of a shared analyte. The resulting data is a 'block' data set and can be analyzed via the chemometric algorithm PARAFAC. This algorithm will parse across the emission, excitation, and concentration dimensions of the 3D block to generate a best fit set of excitation, emission, and concentration parameters for all the species present. Mr. David Gorman (S 2015, pictured with me above) has eloquently demonstrated this approach to determining the relative content of 'highly toxic' to 'lesser toxic' PCBs in Arochlor mixtures.

More recently Ms. Breanna Bellrichard (F 2014) has used our new Agilent HPLC with photodiode array detection to collect the absorbance spectra of a self-induced, highly overlapped set of polyaromatic hydrocarbons mixtures with the aim of not just resolving the chromatographic peaks, but to determine the presents of underlying, buried impurities in a batch sampling of a mock 'process steam environment'. Breanna's efforts were successful in monitoring the process stream for known, expected compounds while observing a low concentration 'impurity' added to the stream. Breanna's work nicely demonstrated the efficacy of using low resolution chromatography with photodiode array detection for this process. Both David and Breanna presented their efforts during departmental seminar time. (*continued on next page*)



Ryan Cornelius

Two years ago Dr. Ken Leopold (my Ph.D. advisor) approached me about involving an SCSU undergraduate student in a joint research project. Dr. Leopold's microwave spectroscopy laboratory measures the rotational energy levels of environmentally relevant van der Waals clusters to determine structure and bonding behavior with very high precision. His graciousness to involve a visiting SCSU undergraduate researcher was based on the addition of a new 'chirp' capability to his spectrometer. This addition allows the scanning of very large swaths of the microwave region in a matter of hours (as opposed to months!), albeit with lower sensitivity. Mr. Ryan Cornelius (F 2017, shown at right) and I spent a week over Winter Break in the Leopold lab collecting spectra on the 3,5 Difluoropyridine - CO₂ complex whose interest

stems from the complexation of CO₂ to the nitrogen atom in the pyridine system. Using the results of the low resolution chirp scans, we were able to surgically examine select regions to fully resolve rotational transitions with greater precision and stronger signal-to-noise. We are in the process of evaluating the data and assigning the observed transitions to an asymmetric top model to determine the detailed structure of this system. We plan on continuing this project over this coming summer during which time Ryan has been awarded a Lando Scholarship.

Recent and additional SCSU students in the Dvorak group include Scully Chen (F 2016), Daniel Ombaso (F 2016), Daniel Hultquist (S 2013), Tim Keller (2011), Erica Beede (F 2015), Keun Choi (S 2011), Brent Finberg (S 2015), and Robbie Daniels (S 2016).



Microwave Spectrophotometer in Dr. Leopold's lab

Congratulations to Annual Student Award Winners!

Award	2013-2014	2014-2015
Allied Health Chemistry	Caitlin Gastecki	Kate Tormanen
ACS Analytical Chemistry	Scott Meyer	Thomas Noehring
Analytical Chemistry	Tate Engstrand	Hannah Ginter
Biochemistry	D'anna Nelson	Elisabeth Desroscher, Jennifer Notch
Biophysical Chemistry	Karlee Cox	Emily McIntire
Freshman Chemistry	Ryan Cornelius	Andrea Bryson, Nicholas Mercurio
Inorganic Chemistry	Ross Lakings	Scott Meyer
Intermediate Organic Chemistry	Tricia Bancroft	Tia Ellis
Nuclear and Radiochemistry	Trent Rottiger	
Organic Chemistry	Hannah Ginter	Travis Novak
Physical Chemistry	Scott Meyer	Joseph Sperling
Outstanding Senior	Curtis Payne	Sarah Bloch
American Institute of Chemists	Luke Brinkman	Scott Meyer
David Sorensen Scholarship	Robert Daniels	Ryan Cornelius
Chemistry Scholarship	Michelle Matsuura, Scott Meyer	Chen Chia Chen, Jason Lee, Jared Vearrier



Accomplishments of the Department not Possible without GREAT Students *Highlighting Scott Meyer, an outstanding senior student*

Students are the reason why we all got into this profession in the first place and it is the students that play one of the most critical roles in the success of the department. It is for this reason that we are highlighting Scott Meyer, one of our excellent students in this year's edition of the newsletter. Scott Meyer began at SCSU in fall of 2010 and will graduate with an ACS approved Bachelor of Science in Chemistry this spring. During this time Scott has made an indelible mark on the department.

Every chemistry faculty who has had him in their classroom agrees that Scott has made his presence known. Not only does Scott do exceedingly well on assignments, but he is also a facilitator of classroom discussions and is considered a valuable resource by his fellow students. In addition to his coursework, Scott has also done valuable research, working with both Dr. Petitto on chemistry pedagogy and with Dr. Jeannot on analytical method development. Furthermore, Scott has served in the department for multiple years as a tutor and a learning assistant for Dr. Petitto's General Chemistry classes. In addition to all this, Scott has been the Chemistry Club President for the past two years. In his role as president, Scott has spearheaded many new initiatives for the club, including new outreach and professional development activities. *Thank you Scott, you will be missed by the Department!*



Scott Meyer shown serving as a Learning Assistant in Petitto's General Chemistry class.

Other Departmental News...

New faces, changes, and Service Awards

We have welcomed three new fixed-term faculty to the department since the last newsletter was published. Dr. Mohammad Hossain joined the department in Fall 2013 and comes to us from the University of Saskatchewan with expertise in organic and biological chemistry. Dr. Thomas Gardner and Dr. Jake Rafferty joined the department in Fall 2014. Directly prior to his arrival at SCSU, Dr. Gardner was a professor at Gustavus Adolphus College. He also brings years of industrial experience to the department. Dr. Rafferty is an SCSU alumnus who graduated in 2004 before earning his Ph.D. in physical chemistry from the University of Minnesota.

There have also been a couple changes to the positions of some of our current faculty. Dr. Kannan Sivaprakasam was hired into a tenure-track position and promoted to Associate Professor. In this position Dr. Sivaprakasam will be heavily involved in the PSM program described on page three of this newsletter. Dr. Daniel Gregory is currently on leave from the department while he serves as Dean of the College of Science and Engineering.

In addition to these changes we are also thankful for some stability! Jeff Stobb, College Laboratory Service Specialist, is being honored for his 15 years of service to SCSU, all of which have been with the department. *Thank you for your service Jeff!*

On a more somber note, retired SCSU Chemistry Professor John Erickson passed away in January 2015 at the age of 95. John was a well-respected and dedicated member of the department and will be sorely missed.



New faculty (clockwise from top) Mohammad Hossain, Tom Gardner and Jake Rafferty



Jeff Stobb,
College Laboratory Service Specialist



John Erickson,
Professor of Chemistry

Alumni Profiles - Where are they now?

Liz Kuoppala - Chemistry BS 1998



Liz Kuoppala might be the only homeless advocate who keeps a metabolic pathways chart in her office. It reminds her when nothing seems to be going right, that our bodies (even those of our opponents) are performing incredible chemistry at efficiencies we can never come close to in the lab.

We've enjoyed watching Liz rack up numerous awards, recognitions, and public policy achievements as executive director of the Minnesota Coalition for the Homeless and in her civic leadership, including most recently the \$10,000 Virginia McKnight Binger Award (2014). Over the past three years alone, housing and homeless programs have seen an increased public investment of \$170 million under Liz's leadership and anti-pov-

erty programs have been turned into ladders for economic opportunity.

Liz enrolled in SCSU in 1994 as a first-generation and nontraditional student after leaving a job running locomotives on the Iron Range. She credits the small and very supportive faculty in the Department of Chemistry and Biochemistry with giving her the tools she needed to succeed in college and in life. Her SCSU experience inspires her current service on the board of directors for Minnesota Campus Compact, where she brings a community voice to the table with presidents of private and public institutions of higher education who work to better connect campus with community.

She tells us Heisenberg's uncertainty principle helps her give up control and better unleash the power of complexity and chaos theory instead of holding tight to broken and old ways of doing things. Lab work has given her a life lesson of learning from mistakes, carefully documenting the factors that might have influenced the outcome, and then trying again, while always daring to try things nobody has achieved before. The progress of science gives her optimism for our collective ability to continually improve public policy. Liz is leaving MCH this summer after fourteen years and we're eager to see where she goes next.

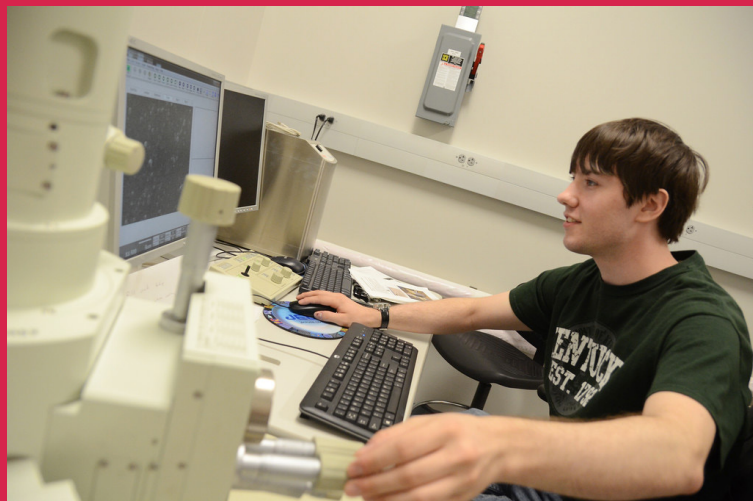
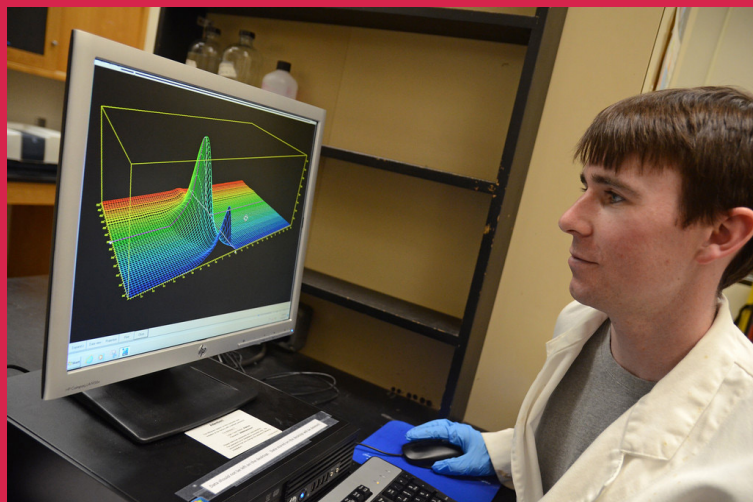
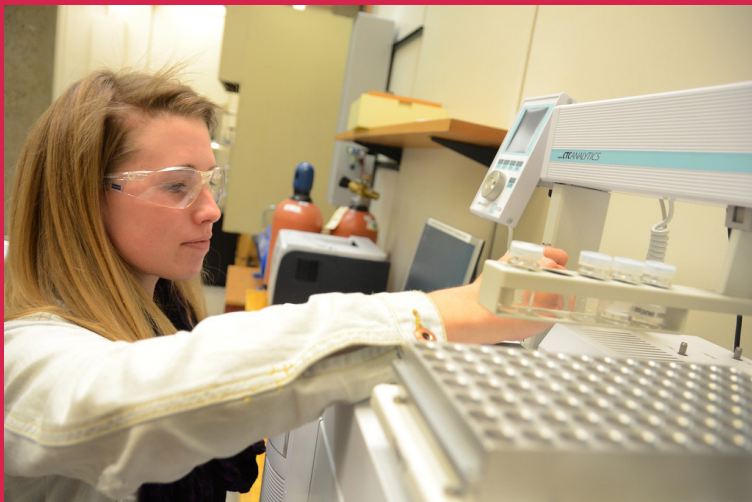
Hailey Gahlon - Chemistry BS 2007



Hailey Gahlon (Chemistry BS 2007), started her graduate studies at the University of Minnesota immediately after earning her degree in chemistry from SCSU. In the middle of her graduate work, her advisor accepted a new faculty position at ETH Zürich in Switzerland. After making the decision to follow her advisor to ETH Zürich, Hailey left the University of Minnesota with an M.S. in chemistry and began her Ph.D. work at one of the most prestigious academic institutions in Europe. Hailey successfully defended her Ph.D. in April 2013. Currently, she is a postdoctoral research associate at ETH Zürich. Hailey says that, "Moving to Europe has opened many new and exciting doors for me. I have grown more than I expected both personally and professionally. Learning new languages and being able to travel Europe was not part of my initial plans when I began

graduate school, but I would not change the way it worked out."

"Thinking back, I have very fond memories of my time as an undergraduate student at SCSU. The chemistry department at SCSU had inspiring teachers that strongly shaped where I am today. Dr. Mechelke and Dr. Sreerama were both inspirational teachers whom I was very fortunate to have. They played a paramount role in my decision to pursue a career in science. Dr. Mechelke was not only an outstanding teacher but he would always make time for my endless list of organic chemistry questions. Dr. Sreerama was always so willing to help and offer advice. It was clear that he wanted his students to be successful in whatever they planned to do in the future. My training in the chemistry department at SCSU laid a good foundation for basic laboratory skills as well as a fundamental knowledge in chemistry that helped prepare me for my graduate work."



THE STUDENTS OF THE CHEMISTRY AND BIOCHEMISTRY DEPARTMENT THANK YOU FOR YOUR SUPPORT!

Please visit the SCSU Chemistry Alumni Webpage at www.stcloudstate.edu/chemistry/alumni and keep us updated with news about you for inclusion in our upcoming newsletter!