



Lt. Krista (Sacy) Mattson, USN: the Navy & Dentistry, p 4



Photo by Ken Cartwright

David Crotteau in Persuasion, p 5

The Cavendish Chronicle

VOLUME 29, ISSUE 2

SPRING, 2014

It's Just Rocket Science

Many people are attracted to science by their childhood fascination with the stars. As a child, **Daniel Welna, Chem '01**, loved space and wanted to be an astronaut. When he arrived at SJU, he was still thinking about pursuing that dream through military service. However, he put that goal on hold so that he could pursue advanced study in chemistry.

Now a federal civil servant with the United States Air Force, Welna

is fulfilling his boyhood aspirations in new ways. His job classification as a chemist may sound mundane, but Welna's work reaches beyond the confines of planet Earth.

After graduation from SJU, Welna joined the laboratory of Professor Harry Allcock at Penn State University, working in synthetic polymer chemistry. He was assigned a Ph.D. project focused on energy storage materials, specifically



Welna tests out the USAF's newest threat

the development of conductive polymers for use as membranes in batteries. Membranes need to be carefully designed to allow
(continued page 6)

Inside

Student Awards	2
Phi Beta Kappa	3
Tenure for Fazal	7
Chem Club	7
Publications	8
ChemWiki	8
Alum Notes	8

Graham Wins Teaching Award

Kate Graham has been recognized with the 2014 Robert L. Spaeth Teacher of Distinction Award for SJU faculty. This honor marks the third year in a row that a member of the chemistry department has been singled out to receive either the CSB or the SJU teaching award. Ed McIntee and Chris Schaller earned the Sister Mary Grell Award for CSB faculty in 2012 and 2013, respectively.

Graham has played a prominent role in developing a new chemistry curriculum at CSB|SJU. In particular, she has been the editor and principle author of a series of workbooks for four classes: Introduction to Structure and Properties as well as Reactivity I, II and III. Along with several other members of the department, she has been a proponent of importing

guided inquiry methods into our classrooms. These approaches have been shown to be highly effective in chemistry and physics departments nationwide.

Graham grew up on a small ranch outside Whitehall, MT and attended Montana State University as a National Merit Scholar. Research at MSU and summer
(continued page 6)

Recognition for Students on CSB | SJU's CSC Day



CRC Award in First Year Chemistry



Van



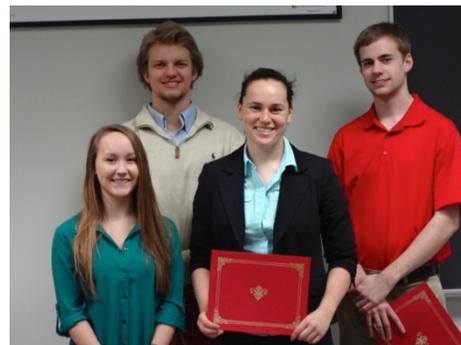
Bramer



Klinker in the wild



Autumn Flynn



Flynn, Heath, Chatelaine & Hager

The Chemistry Department's Annual Awards Ceremony was held on Campus Scholarship & Creativity Day, April 24. The CRC First-Year Chemistry Achievement Award, sponsored by CRC Industries, was presented to **Claire Buysse, Sarah Clark, Faith Kersey-Bronec, Adam McVey, Luke Morrey and Dan Voce**. The CSB|SJU Chemistry Department Award for Distinction in First Year Chemistry was given to **Michael Beckmann, Emma Bonglack, Zachary Gibbs, Ben Hodapp, Ryan Johnson, Joseph Koll, Alli Kosobud, Ellen Monzo, Lindsay Sommer, Alex Vanyo, Anna Webster and Nicole Womack '17**.

The **Richard L. Jochman** Scholarship for Achievement in Organic Chemistry, made possible by a donation from **Dr. Paul Zenk '78**, was presented to **Alec Bramer, Chem '16 and Hieu Van, Bchm '16**. The CSB|SJU Chemistry Department Sophomore Award for Distinction in Chemical

Reactivity was given to **Haley Chatelaine and Becca Flynn, Chem '16, Sam Hager and Ben Heath, Bchm '16**.

The Analytical Chemistry Award, from the eponymous Division of the American Chemical Society, was shared by **Autumn Flynn and Gabe Amon, Chem '15**. Flynn also garnered the **Abbot John Klassen** Summer Research Award, established through a donation by **Dr. Steve Holmgren '89** and his wife, Dr. Mary Cloninger.

The **Father Matthew Kiess** Scholarship, given in recognition of high aptitude for laboratory work, went to **Anna Luke, Chem '15**. *(continued next page)*



Distinction in First Year Chemistry



Luke



Sinner takes the Grand Tour



Amon

(from previous page)

The **Sister Rogatia Sohler** Scholarship, funded by the family of retired faculty member **Dr. William Muldoon**, is given to the outstanding CSB junior in the department. **Erica Sinner, Chem '15** earned the award. The SJU counterpart is the Glen E. Arth Award, established by colleagues at Merck, Sharp & Dohme upon the retirement of **Glen Arth '33**. The award was given to **Sam Klinker, Chem '15**.

The ACS Undergraduate Award for Organic

Chemistry, given to a senior who shows promise for a career in organic chemistry, went to **Carla Saunders, Chem '14**. **Michael Humbert, Chem '14** won the ACS Undergraduate Award for Inorganic Chemistry. In addition, Saunders and Humbert shared the American Institute of Chemists Award for achievement and potential advancement in the chemical professions.

Paige Armbrister, Bchm '14 and **Erin Wissler, Chem '14** shared the CSB|SJU Chemistry Department Distinguished Service Award.



Humbert & Saunders



Armbrister & Wissler

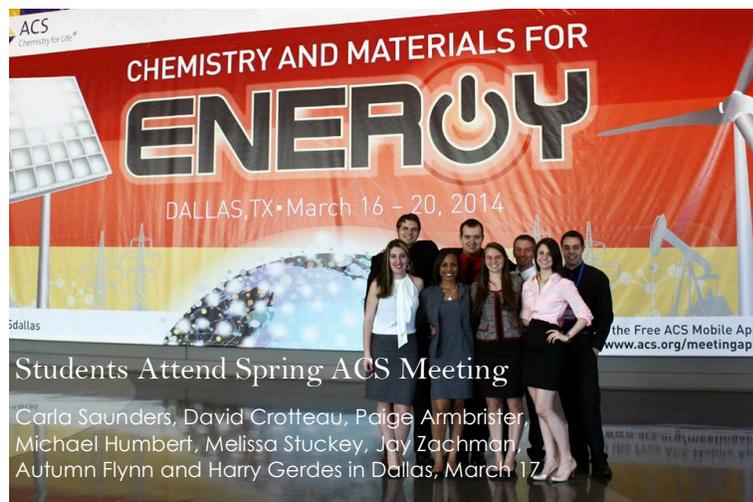
Phi Beta Kappa Inductees

A number of chemistry and biochemistry students were recognized this year by induction into Phi Beta Kappa, the national honor society.

Inductees included **Joe Wick** and **Ryan McMillan, Bchm '14**; **Graci Gorman, Kaitlyn Lauer, Sean Pickthorn**

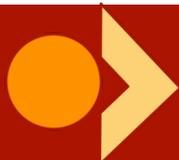
and **Melissa Stuckey, Chem '14** as well as **Jeff Bowers** and **Erica Sinner, Chem '15**.

Phi Beta Kappa, founded in 1776, is the nation's oldest academic honor society.

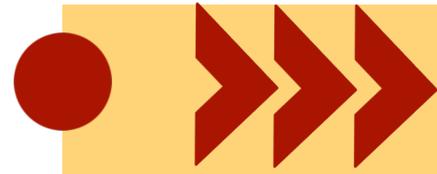


Students Attend Spring ACS Meeting

Carla Saunders, David Crotteau, Paige Armbrister, Michael Humbert, Melissa Stuckey, Jay Zachman, Autumn Flynn and Harry Gerdes in Dallas, March 17



In the Navy



Lt. Krista Mattson at home with her daughter.

The Health Professions Scholarship Program (HPSP) provides professional school tuition in exchange for military service

At CSB|SJU, we strive to instill a sense of responsibility for service in students. Many graduates enlist in service organizations such as the Peace Corps, Americorps or the Benedictine Volunteer Corps. Others provide medical and dental services to underserved areas. A few of our alumni have embraced a different variation on this value, deciding instead to serve their country through an association with the military.

It is easy to forget that the success of a military organization depends on an array of supplies and support structures. **Lt. Krista (Sacry) Mattson, Chem '07**, knows otherwise; she is an active

duty dentist with the United States Navy.

Most dentists work in a small, private clinic. To Mattson, the energy she derives from working with other dentists at Port Hueneme Dental Clinic and the high level of camaraderie among her coworkers are favorite aspects of her job.

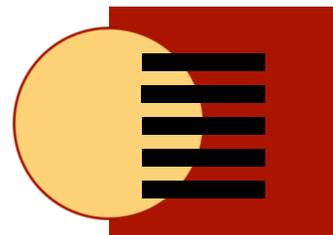
After graduating from CSB, Mattson worked for a year as a quality control chemist at a pharmaceutical company. She then enrolled in dental school at Creighton University and was awarded a tuition reimbursement through the Navy's Health Professions Scholarship Program. The award also included a signing bonus

and stipend in exchange for four years of active duty service. When her classmates left for their first summer break, Mattson went to a 5-week course at the Navy Officer Development School. Upon graduation, she was promoted to lieutenant and given her first assignment.

In addition to her responsibilities in patient care, Mattson has a number of administrative responsibilities. She is the division officer and coordinates the on-call schedule as well as training for the officers and enlisted personnel. She also coordinates activities for the clinic's participation in Children's Dental Health Month at area schools. Each year, she spends a week in San Diego for continuing education training.

The job keeps her busy. "I am in patient care most days performing dentistry," she said. "I also do physical training individually or with the command almost every day." Twice a year she is required to complete rigorous physical readiness tests. Nevertheless, she still has time for family and fun. She has a 10 month old daughter and enjoys *(continued page 7)*

Chemistry and the Art of Persuasion



David Crotteau plays Captain Wentworth in CSB|SJU Theater Department's production of Jane Austen's *Persuasion* by Melissa Leilani Larson. Photo by Ken Cartwright.

Three chemistry and biochemistry students took part in a CSB|SJU Theater Department production this semester. The play, *Persuasion*, is a very recent adaptation by Melissa Leilani Larson from the original Jane Austen novel. Set in Somerset, England, during the Regency era, the show featured romance, comedy, dancing and period costumes.

"It's the story of young Anne Elliot who turned down the love of her life eight years prior, thinking she was living up to her family duty," explained **Jenny Paul, Bchm '17**. Paul was an assistant stage manager for the show. "Anne

quickly realizes what a mistake she has made, and when the pair meet again, she seeks to win him back."

David Crotteau, Chem '14, played Captain Wentworth, the naval officer who returns to Somerset from the Napoleonic Wars eight years after Anne Elliot broke off their engagement. Crotteau spent countless hours on line memorization, practicing Received Pronunciation in order to make a believable British Naval officer, and learning choreography.

Ingrid Grandgenett, Chem

'16, was involved with costume crew. She helped the actors with costume changes during the performance, occasionally doing minor sewing repairs as well. Like other backstage jobs, it's a lot of pressure.

"Working backstage during a show is like a choreographed dance," said Paul. "There are a lot of moving pieces, and a lot of things can go wrong. Every night is different, and it takes some practice to realize what works and what doesn't work."

Paul did backstage work in high school, including set-construction and moving scenery; by senior year she was a tech leader. She previously worked with CSB|SJU Theater as an assistant stage manager for *Bad Seed* last fall. Grandgenett was also involved in theater in high school, playing the piano in the pit orchestra for *Grease*, *Lil' Abner* and *Les Miserables*. Of the three, only (continued page 7)



Working
for those
who put
their
lives at
risk
every
day

Welna's Contributions Send Astronauts Skyward

(continued from page 1)

certain electrolytes to cross barriers while keeping other materials out.

Upon obtaining a Ph.D., Welna became a National Academies of Science post-doctoral fellow for the US Air Force Research Laboratory (AFRL). The AFRL operates a number of laboratories across the country dedicated to meeting the technical needs of the USAF. Although his research area was still in materials for energy storage, Welna's focus shifted to the design of electrodes for lightweight batteries.

Welna spent four years at AFRL, then became a federal civil servant at the NASA Glenn Research Center in Ohio, where he worked on the development of batteries for the current and next human space exploration programs.

"I was lucky to work with batteries that are

currently up at the International Space Station, astronaut EVA suits (for Extra-Vehicular Activity, or spacewalk), and in the Mars Landers," said Welna. He also did research and development into next generation battery chemistries for possible use on Mars or other deep space journeys.

Personal factors, including family considerations and a desire to move to a new research area, brought Welna back to the Air Force. As an R&D task and project manager, he works very independently while also supervising a team. He also spends much of his time in meetings, whether they are scheduled or informal problem-solving sessions, as well as communicating via e-mail. Interfacing with some of the leaders of the organization has been one of the most educational aspects of the job, giving him a new perspective on how things

work. About once a month he needs to travel, usually to Washington, DC, in order to interact with counterparts in other government agencies.

Welna does get time for activities outside of work, including the occasional triathlon or half marathon. He loves to travel, and apart from DC his favorite destinations include places with lots of history or good beaches. Above all, though, his favorite thing to do is hang out around the fire in the backyard with family and friends. That relaxation is well-deserved, and probably more appreciated because of a sense of professional fulfillment.

"I see my job as important to a very specific group of people: the men and women in the military who put their lives at risk every day for this country," said Welna.

Graham Inspires Students With Challenge and Commitment

(continued from page 1)
experiences at the National Institutes of Health in Bethesda, MD, motivated her to learn more chemistry. She obtained a Ph.D. from Cornell University on a

National Defense Science and Engineering Graduate Fellowship, working in the lab of crystallographer and natural products chemist Jon Clardy. She came to CSB/SJU directly after graduate school.



Austen Classic Draws Chemists

(continued from page 5) Crotteau had not been involved in theater before.

"I was astonished that I was selected for the cast, let alone a lead role," he said. He confessed that he had auditioned on a dare from **Erin Wissler, Chem '14**. He claims to have had an enormous amount of help from the cast, but his inexperience went largely unnoticed.

"I didn't even realize that he had never acted before until the last month of rehearsals," said Paul.

The production was the result of an enormous amount of work. Practices started in February, and were usually three or four times a week for three hours at a time. The cast would read through the whole show, with actors practicing their English accents. In March, stage managers started coordinating and recording the actor's movements on stage. Meanwhile, period costumes were designed and made entirely from scratch.

Mattson Launches Career Through Naval Program

(continued from p 4) spending time with her husband, Zach Mattson SJU '07, and their two dogs. They enjoy surfing and playing at the beach near Point Mugu Naval Base, where they live.

Later this summer, Mattson will be relocating to another clinic in Lemoore, CA; the US Navy relocates dentists every two or three years. Assignments can be on a ship, overseas, with the

Technical rehearsals began at the end of March, so the cast and crew began practicing together, and additional crew members were brought in, including Grandgenett. The final week started with two 12 hour days of rehearsal, and continued with 6 to 8 hour rehearsals every night until opening night. Because the show was so large, it was crucial to have a lot of practice.

Although Grandgenett and Paul are thinking about graduate school and research after college, they may keep up their involvement in the arts for a while. "I enjoyed meeting new friends and being part of theater again," said Grandgenett.

For the time being, Crotteau has performed his last play. He is an officer candidate in the United States Marine Corps; he will be working to earn his commission in the Fall with a contract to fly as a pilot. After that, his dream is to become an astronaut. It's a long shot, but we already know he can accomplish the impossible.

marines, or at a naval base in the United States. So far, Mattson is undecided about her plans after her next assignment. Some dentists remain with the Navy for twenty years or more, whereas others decide to move into private practice after their initial commitment. Either way, Mattson's association with the military has played a key role in her education and her personal development.

Student Finds Fun in Helping Community

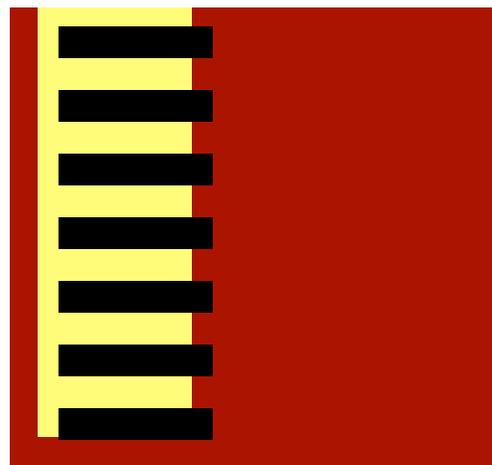
A first year chemistry student has gotten an introduction to Benedictine values and made connections with a local community. **Rosalino Galan '17** has been tutoring a few times per week at the community center at Bel Clare Estates. The volunteer job is part of an assignment for Dr. Ron Pagnucco's introductory Peace Studies class, but Galan doesn't think of it as work.

"The kids and other tutors at Bel Clare really make it fun", said Galan. Thursdays, instead of studying, they watch movies with the kids or play in the gym.

The program also offers services for parents adjusting to life in the community.

Chem Club Has Big Year

The chemistry club has had an active year. Organizers started the year with a "meet the profs" pizza party. They later held a chemistry bingo event, complete with liquid nitrogen ice cream, as well as a Chemistry jeopardy party. The first Chem Prom was a highlight of the year. An end-of-the-year pizza event is planned for study day.





Recent Departmental Publications

Schaller, C. P.; Graham, K. J.; Johnson, B. J.; Fazal, M. A.; Jones, T. N.; McIntee, E. J.; Jakubowski, H. V. "Developing and Implementing a Reorganized Undergraduate Chemistry Curriculum Based on the Foundational Chemistry Topics of Structure, Reactivity, and Quantitation." *J. Chem. Educ.*, **2014**, *91* (3), 321–328.

Graham, K. J.; Nur, A. S.; Schaller, C. P. "A Sublimation Experiment with Unknowns." *Chem. Educator*, **2014**, *19*, 1–2.

Yoshimura, A.; Koski, S. R.; Kastern, B. J.; Fuchs, J. M.; Jones, T. N.; Yusubova, R. Y.; Nemykin, V. N.;

Zhdankin, V. V. "Hypoiodite-Mediated Cyclopropanation of Alkenes." *Chem. Eur. J.* Article first published online : 28 March 2014, DOI: 10.1002/chem.201402372

Jakubowski, H. V.; Johnson, B. J. "Biological inorganic chemistry: A new introduction to molecular structure and function, 2nd edition." (Book Review) *Biochem. Mol. Biol. Educ.* Article first published online : 20 March 2014, DOI: 10.1002/bmb.20788

Graham, K. J. "An Improved Decision Tree for Predicting a Major Product in Competing Reactions." accepted to *J. Chem. Educ.*, April 2014.

The Cavendish Chronicle

Editor: Chris Schaller
cschaller@csbsju.edu

Story Credits: Dan Welna, Krista Mattson, David Crotteau, Jenny Paul, Ingrid Grandgenett, Anna Luke, Rosalino Galan.

Photo Credits: Carleen Schomer, Ken Cartwright, Paige Armbrister, Dan Welna, Zach Mattson, CSB | SJU Chem & Biochem students, College of Saint Benedict.

CSB | SJU Chemistry
37 S. College Ave.
St. Joseph, MN 56374

College of Saint Benedict | Saint John's University

On Sabbatical

Dr. Brian Johnson and Dr. Nicholas Jones are on sabbatical for the spring semester. Johnson has been developing materials for new courses in materials science and inorganic synthesis. Jones is working in the laboratory of Dr. Viktor V. Zhdankin at University of Minnesota Duluth.

Alum Notes

Serina Aubrecht, Chem '09, has enrolled as a naturopathic medical student at Bastyr University California.

Ben Durheim, Chem/Theo '07, M.A. Theo '09, has obtained a Ph.D. from the Theology Department at Boston College. His dissertation title is "Christ's Gift, Our Response: Martin Luther and Louis-Marie Chauvet on the Connection Between Sacraments and Ethics".

Debra (Wentz) Ferraro, Bchm '00, returned to the department to teach a laboratory during the spring semester. Her husband, **Dan Ferraro, Chem '00**, recently accepted a position as a radiation oncologist at CentraCare in St. Cloud. Wentz has a Ph.D. in biochemistry from the University of Iowa. Ferraro completed M.D./Ph.D. studies at Iowa before taking a residency at the Washington University School of Medicine in St. Louis, MO.

Structure & Reactivity on ChemWiki

CSB|SJU Chemistry's online textbook, Structure & Reactivity in Organic, Biological and Inorganic Chemistry (SROBI), has been made available at Chemwiki (<http://chemwiki.ucdavis.edu>). The Chemwiki project is an open access textbook environment under the direction of Professor Delmar Larsen at University of California Davis. The SROBI text includes contributions from **Henry Jakubowski, Kate Graham, Ed McIntee, Nicholas Jones, Brian Johnson** and **Alicia Peterson**, but

Chris Schaller is the principle author of the text. To date, the original SROBI site consists of about 400 web pages, organized into chapters.

This is not the chemistry department's first contribution to UCD's open access project. Henry Jakubowski was asked to donate his biochemistry text to Biowiki a few years ago (<http://biowiki.ucdavis.edu>).

