



Alumni juggle teaching careers, page 4

- CSB/SJU is a leader in study abroad
- US News & World Report's Best Colleges 2010 Rate CSB 25th in U.S. for Commitment to Teaching

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## McKenna Recognized for Innovation

Chemistry professor **Anna McKenna** has been awarded the 2011 Tom Creed Memorial Award for Effective Electronic Pedagogy. A favorite instructor of many CSB/SJU students over the years, McKenna teaches general chemistry and advanced inorganic chemistry.

The award was given for McKenna's development of Moodle-based tutorials for Chem 125: Introduction to Structure and Reactivity, the department's new entry-level course for science majors. These tutorials are designed to provide students with a first look at a topic. After completing a tutorial, students are better



Anna McKenna

equipped to read the textbook and to participate in class.

McKenna was very happy with the recognition she received. She says it is a

testament to the innovative CSB/SJU chemistry program. "I have been amazed when I attend national meetings that using a variety of teaching styles is still a new concept to some," she said, "even though we have been using technology and group work for a number of years." In fact, the team approach used in chemistry has proven attractive to faculty in other disciplines, with growing numbers of instructors scheduling classes in Ardolf's team-oriented classrooms.

Since arriving at CSB in 1983, McKenna has seen a number of changes on campus. (see "Creed", page 2)

## Nikki Jochman Honored with Award



Nikki Jochman in the Ardolf Science Center Stockroom

**Nikki Jochman**, stockroom manager for the chemistry department, will receive the Extraordinary Performance Award from Saint John's University. The award is given in recognition of outstanding staff of the university. Jochman's primary responsibilities include ordering chemicals and supplies,

maintaining the chemical inventory, preparing lab materials and working with student employees.

"I felt humbled and honored when I learned that I had been nominated for the performance award," said Jochman. "It was a complete surprise to learn I had been selected." (see "Stockroom", page 3)

*McKenna was motivated by her own experiences as a woman studying chemistry in the seventies.*

## Creed Award Well-Deserved

(from page 1)

At that time, a great deal of attention was being directed campus-wide to gender in the classroom. She began reading about issues faced by women, in particular, in the classroom; much of what she read resonated with her own experiences.

Together with other members of the chemistry faculty, she began to transition from straight lecture to more interactive pedagogies such as team based learning. These approaches had been shown to help

all students perform better, but had an enhanced impact on women. Now, few students can imagine a 70-minute chemistry lecture with no breaks for group work.

Fellow faculty members were pleased to see McKenna rewarded, generally regarded as a dedicated teacher. "Anna really values building strong, supportive relationships with her students," said Kate Graham. "She also works very hard at taking material and developing a format that is right for her class."

The moodle-based instructional program was also lauded. "Our first year curriculum is not just a rehash of high school chemistry," said inorganic chemistry colleague, Brian Johnson. "Getting students up to speed on new material was very important to our program." Student evaluations indicated that they found the moodle site to be one of the most valuable learning resources in the general chemistry program.

## Fazal, Ross Funded for Lab Project



Fazal (left) and Ross

Chemistry professors **Mike Ross** and **M.A. Fazal** have received a \$10,000 grant from the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon). The world's largest annual confer-

ence and exposition for laboratory science, Pittcon also supports science education through The Pittsburgh Conference Memorial National College Grants Program (PCMNCG). Each year PCMNCG awards at least ten \$10,000 awards to small college science departments for the purchase of scientific equipment, audio-visual or other teaching aids, and/or library materials for use in the teaching of science at the undergraduate level.

The grant request was related to an ongoing redesign of the laboratory curriculum. The CSB/SJU chemistry depart-

ment has been working on a major curricular change in response to new guidelines from the American Chemical Society's Committee on Professional Training.

One of several new courses is a Measurement and Characterization Lab. This lab will explore how chemical measurements are made and how instrumental measurements are related to chemical analysis. The possibility that this lab may accommodate larger numbers of students than junior-year analytical chemistry, and the desire to increase instrumental exposure (see page 7, *Analytical*)

# A Watchful Eye on Minnesota Health Concerns

Most Americans worry about dangers to their health from time to time. The news media abound with stories about some toxin at an abandoned industrial site, some rampant microorganism, or fallout from a disaster like the Japan tsunami.

For chemistry alumnus **Chris Brueske, SJU '00**, dealing with these and other issues is a full-time job. Brueske is the Assistant Director for the Public Health Laboratory at the Minnesota Department of Health (MDH). He oversees laboratory support operations, including budget and contract management, clerical and technical support, and IT project management. In addition, Brueske often represents the laboratory division in meetings with partners, clients, MDH administrators and the state legislature. He also works collaboratively on strategic planning and workforce development projects, keeping the laboratory up to date on technological developments and public health concerns.

Although he is relatively young for this position,

Brueske clearly earned it. Early in his career, he worked hard to gain the confidence and trust of MDH leadership and was fortunate to have managers who entrusted him with job duties beyond traditional laboratory work. As a result, he quickly took on more administrative and management responsibilities.

One of Brueske's seminal experiences was the summer undergraduate research program in chemistry at CSB/SJU. "It was really the first time that I experienced ownership and responsibility for a project of my own," said Brueske. "It prepared me for all types of work well beyond laboratory research." That experience was followed by a summer fellowship at the Woods Hole Oceanographic Institute, where Brueske collaborated with young scientists from around the world.

Brueske did not immediately enter the public health field after graduation. For two years, he worked as an apprentice on two organic farms. He later developed his technical skills while working

as an analyst for Pace Analytica. He also spent a winter canvassing for the Sierra Club. All of these experiences helped him realize that he wanted to work in the non-profit or public sector.

An interest in nature and environmental issues was always part of Brueske's soul. Initially drawn to SJU because of its beautiful woods, prairie, and lakes (not to mention an attractive financial aid plan), he was soon impressed by the dedication of his professors. He also became involved in many campus activities. "I met many new friends who shared my passions and helped me make it through graduation with a smile on my face," Brueske said. Ten years after graduation and moving up in his career, Brueske said, "I've realized the huge benefit of obtaining a science degree within a well-rounded liberal arts environment."



**Chris Brueske**

*An interest in nature and the environment first drew Brueske to Saint John's.*

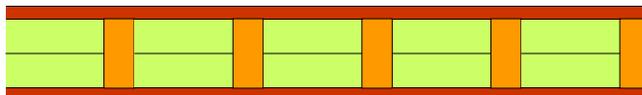
## Stockroom Coordinator Recognized

(from page 1) Jochman grew up in Kimberly, Wisconsin, and on a nearby dairy farm. A graduate of St. Norbert College, she also holds a Master's degree in Biology from the University of Kansas. She started working in the stockroom in 1979. Her late husband, **Richard Jochman**, was a longtime member of the CSB/SJU chemistry faculty.

The department has been through a lot of changes since Jochman began in the stockroom, including moving from SJU in 1992.

"I started just when women were discovering that chemistry was a great area of study for them," she observed, "so it was fantastic to see tremendous growth in women majors during the 80's." Jochman is also

amazed at how the department has developed an excellent selection of modern scientific instrumentation that students get to use every day. Still, the human side of things is what has kept her going. "Perhaps the most rewarding part of the job," says Jochman, "is the ability to interact with so many students over the years."



*With an eye on the future, chemistry alumni dedicate themselves to teaching*

## The Lure of the Small College

We are all shaped by our experiences. For many undergraduates, a family member may serve as a lifelong inspiration to become a physician or a scientist. For many students, a small college experience leaves a lasting impression. Some may even be motivated to provide that experience for future generations.



Blaine

A number of CSB/SJU chemistry and biochemistry graduates have found rewarding careers on the faculty of small colleges. **Chris Blaine '88** says she was encouraged to go into college teaching by **Professor Emeritus Mark Hughes**. **Professor Emeritus Bob Fulton** was also a strong influence, who taught her the importance of setting up a community of learners in the classroom, with the class working as a team and the instructor functioning as a coach. Blaine's take on those methods earned her the 2010 Distinguished Teaching Award at Carthage College, where Blaine is an Associate Professor and Department Chair. Blaine described receiving the award as a humbling experience, and feels "blessed and amazed" to have a career she loves deeply.

With that career goal firmly in mind after leaving CSB, Blaine took part

in a Preparing Future Faculty (PFF) program at the University of Minnesota while in graduate school. Graduate advisors are not always supportive of activities that take time away from research productivity, but Blaine was determined. Having experienced the exciting atmosphere of a large state school, her choice was still the liberal arts environment. "I wanted the opportunity to mentor and interact with students in a more meaningful way," she said.

For **Steve Gravelle '84**, the teaching bug bit while TAing a General Chemistry lab. As with Blaine, the individual attention that he received in college fostered a desire to work closely with people throughout his career. After SJU, he chose to attend Northwestern University; the small but prestigious graduate school allowed him to have direct interaction with his research advisor rather than working under postdocs and senior research students. An Associate Professor at Saint Vincent College, a Benedictine sister school of CSB/SJU in Pennsylvania, Gravelle has seen many successful careers started in teaching, industry, graduate research and government labs.

That appreciation for one's true impact may only come after time. "It's very satisfying after

20 years as a professor to meet past students and hear about the positive effect I had in their life and career," said **Steve Drew '85**, Professor of Chemistry at Carleton College.

For Drew, the realization came during graduate school that he really enjoyed teaching and doing research with undergraduates, so it was obvious what he should do for a living. However, his positive experience doing research with **Mike Ross** at SJU was also a big factor in attracting him to college teaching. Drew joined the faculty at Carleton after graduate work at University of Colorado, Boulder and a postdoc at University of North Carolina, Chapel Hill. His research, at the interface of electrochemistry and materials science, remains an important part of his job.

**Ted Pappenfus '95**, Associate Professor at the University of Minnesota, Morris, says undergraduate research is also a favorite aspect of teaching. Students in his lab have co-authored over fifteen peer-reviewed papers in the scientific literature and



Gravelle

made many presentations at national meetings. Pappenfus again cites relationships as a crucial part of that endeavour. "The close interaction between students and faculty is what I enjoyed as a student and is what I appreciate now as an instructor," he said.

"Balancing research and teaching is difficult," claims Blaine, who still managed to mentor seven students in lab this year on top of a regular teaching load. She says it



**Pappenfus**

helps to be organized, and she was always good at multitasking

(full disclosure: Blaine, whose father was a printer, was a seminal staff member of the Cavenish Chronicle). Weekly meetings with students and a lot of patience are also key.

Perseverance is as important in starting a career as it is in the research lab.

Blaine started her teaching career at Bowdoin College, spending two years there as an adjunct faculty member. The experience gave her a chance to focus on course preparation and to develop her teaching style. She also had strong mentoring experiences with some of the faculty there. "I seriously would not have survived my first few years at Carthage without those two years to get my feet wet in teaching," declared Blaine.

Using a temporary teaching position to start a career is not uncommon. Like Blaine, **James Wollack '04**



**Wollack**

took part in the University of Minnesota's PFF program while a graduate student. An internship

with that course led to a laboratory instructor position at Macalester and then a one-year position teaching organic at Hamline. Hamline faculty encouraged him to develop his own lab curriculum and provided him with support for two student researchers. The initiative he took in those areas helped him to secure an Assistant Professor position at College of Saint Catherine, even though he did not have the formal post-doctoral training many schools are looking for these days. Wollack has plunged into the job with enthusiasm; he is already serving as the faculty athletic representative and was recently awarded a \$31,000 research grant from 3M.

**Jennifer Klein '02** hopes to follow a similar trajectory. Currently an Adjunct Assistant Professor at Saint Olaf, she gained teaching experience on the side while still a postdoc at University of Minnesota. She hopes the experience she is gaining now will win her a permanent position at a Minnesota liberal arts college. Meanwhile, she is enjoying the opportunity to work with upper-division students. "I teach a project-based advanced biochemistry course for juniors and seniors where I ask my students to develop a real biomedical research proposal."

The highlight of her job is

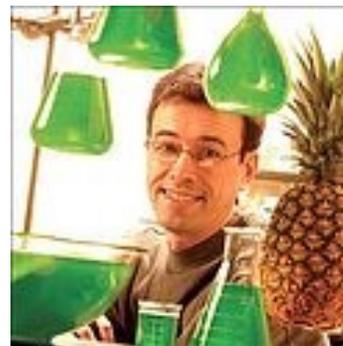
when students surpass her expectations.

All of these dedicated people value time for family and leisure activities. Drew, married to **Mary Seykora '86**, has three teenage daughters but

finds time to enjoy running, fishing, and gardening. Steve and **Ann Gravelle '85** are seeing their second son off to college this fall. They are both very active in their local parish, and Steve Gravelle is an avid cyclist. At the other end of the parenting years, Klein has a new baby and a four year old, and a yard full of chickens and chicks.

Blaine and her husband also have two children. One of their kids came through a special-needs adoption and required a great deal of care during his first few years, but colleagues at Carthage were very supportive. More recently, Blaine has been visiting her son's school with chemistry activities; she often takes secondary education/chemistry majors with her for the experience.

The emphasis on a balanced life is not surprising, says Wollack, for graduates who came from an environment in which professors might spend their spare time "harvesting maple syrup, writing short plays, or running marathons." After all, forming a well-rounded person is what liberal arts colleges are all about.



**Drew**

*For most, a personal connection with students in the classroom or research lab is the key*



**Klein**

## Ardolf Contingent Attends Anaheim ACS



### Students storm Anaheim

*Tapping into the energy of 15,000 chemists, engineers, publishers and supply dealers*



Coloskey

A group of CSB/SJU faculty and students attended the 241<sup>st</sup> National Meeting of the American Chemical Society (ACS) in Anaheim, California on March 27<sup>th</sup> to 31<sup>st</sup>.

Students included **Moses Adeagbo '12**, **Mardi Billman '11**, **Ned Coloskey '11**, **Sarah Kokkila '11**, **Peter Ly '11**, and **Hang Zhang '11**. Billman, Ly and Zhang were presenting results from research conducted at CSB/SJU with chemistry faculty members Brian Johnson, Kate Graham and Alicia Peterson, respectively. Kokkila was presenting a poster on her summer research in computational chemistry at NASA. Coloskey and Adeagbo gave posters on laboratory development projects. Their experiments will be incorporated into CSB/SJU's new Purification I & II laboratory sequence.

Other than an initial hitch getting into their hotel rooms, students were enthusiastic about

the meeting. "It was an awesome experience," said Ly. Billman agreed. "The biggest thing I learned was how much I still need to learn," she said.

Students were impressed by the energy of the meeting. Although attendance details for Anaheim have not yet been published by ACS, typically 14,000 to 18,000 people will be present at national meetings each spring and fall. Dozens of workshops, poster sessions and seminars run concurrently at convention centers and hotels, with shuttle buses operating frequently between sites.



Kokkila

A number of chemistry professors from CSB/SJU also attended. **Kate Graham**, **Nicholas Jones**, **Ed McIntee**, **Alicia Peterson** and **Chris Schaller** all presented seminars on pedagogical topics. A session that included talks by Graham and McIntee generated a

lot of interest, with conversations continuing over the lunch hour afterwards.

Faculty members will sometimes attend an ACS meeting even if they are not presenting; it's a way of keeping up to date on new developments. "I saw a lot of wild things that I am going to have to try this summer," said physical chemist, **Leo Seballos**.

For Jones, the highlight of the meeting was an afternoon session recognizing Princeton University's Professor David MacMillan. "MacMillan is one of the bright stars of organic synthesis right now," said Jones. A conversation with Columbia University's Professor Tristan Lambert after the session led to plans to collaborate on a research project with Jones. "That certainly made the meeting worthwhile," said Jones.

Schaller attended a three-day symposium in honor of his graduate advisor, Pete Wolczanski of Cornell University, winner of the ACS Award in Organometallic Chemistry.

There was time to enjoy other aspects of the meeting as well. For Seballos, a native Angeleno, that included some very fine local tacquerias.



# Grad Student Gets *Science* Publication

Jeremy Smith of New Mexico State University and Karsten Meyer of Friedrich-Alexander-University, Erlangen, have published a ground-breaking study of an iron(V) nitride complex.

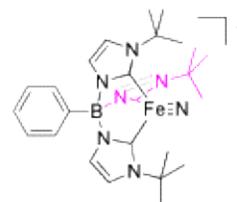
Graduate student **Jeremiah Scepaniak '05** of the Smith lab is the lead author of the article (*Science*, **2011**, 331, 1049-1052). Publication in such a prestigious journal was merited because there has been speculation that iron in this unusual oxidation state may play a role in a number of nonheme dioxygenases in nature. Even a few years ago, however, the

suggestion that iron(IV) may play a role in biology was met with skepticism, so there has been an effort to see whether such compounds can really exist.

Iron nitrides, containing an iron triply bonded to a nitrogen atom, have also been proposed as intermediates in the conversion of atmospheric nitrogen to ammonia. This transformation has biological significance, as seen in the role played by nitrogenase in the nitrogen cycle, and is relevant to the industrial Haber-Bosch process. Interestingly, Smith and Scepaniak's nitride complex

decomposes to yield ammonia upon treatment with water, just as is proposed to occur in nitrogenase.

The publication has drawn a great deal of praise. "The isolation and characterization of an iron(V) nitride complex extends the limits of what was thought possible for this, the most abundant element on Earth," said Professor Christopher Cummins of Massachusetts Institute of Technology, who has also published in this area. "The results described in this article represent a synthetic chemistry achievement par excellence."



**Scepaniak's nitride.**

**"A synthetic chemistry achievement par excellence."**

## Analytical Faculty Win Grant Award

(from page 2) at introductory levels, motivated Ross and Fazal to consider ways to make data acquisition more flexible.

As a result, Fazal and Ross submitted a successful proposal to PCNMCG to fund sixteen MicroLab FS-522 data acquisitions systems ([www.microlabinfo.com](http://www.microlabinfo.com)). These systems will provide instrumentation to be used throughout the new chemistry lab curriculum, but most specifically in the Measurement and Characterization Lab as well as Integrated Lab (an In-Depth Level lab, in ACS Terms). The proposal included matching funds from CSB/SJU, for a total project budget of \$20,716.

The FS-522 can be used to measure absorbances, voltages and currents, and it

is adaptable to techniques such as fluorescence, making it amenable to a wide array of introductory exercises in the limitations of measurement.

Applications in the integrated lab might include coulometry and cyclic voltammetry of a transition metal complex, synthesized in the lab, accompanied by analysis of ligand binding and the electronic states of the metal atom. Making use of fluorescence abilities, derivatized biomolecules will be analyzed and the sensitivity to excitation and quenching will be studied in conjunction with Ocean Optics spectrometers. The FS-522 will also allow for kinetic studies of both small molecules and biomolecules, leading to the elucidation of reaction mechanisms.

## 50 Years of Schomer Power



**Schomer**

**Sister Carleen Schomer** was recognized for her 50<sup>th</sup> year as a member of St. Benedict Monastery. Schomer, a native of Lastrup, Minnesota, made her first profession in the monastery in 1961. After graduating from CSB, she spent a few years teaching elementary school and high school in Minnesota and Puerto Rico.

Schomer later received a Masters degree from Marquette University and a Doctor of Arts from the University of Illinois at Chicago. She has been teaching in the chemistry department for thirty six years.

## CSB/SJU Chemistry

### The Cavendish Chronicle

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The College of Saint Benedict  
Saint John's University

# Spring Award Winners

The chemistry department held its annual student awards ceremony on Scholarship and Creativity Day, May 4th, in the Ardolf Science Center.

The American Institute of Chemists Awards for outstanding seniors were given to **Sara Kokkila '11** and **Jake Petersburg '11**. Kokkila also won the ACS Inorganic Award.

The **Glenn Arth Award** and **Sister Rogatia Sohler Award** for outstanding juniors, were presented to **Eric Uzelac '12** and **Shirin DeSouza '12**, respectively. **Joe Gair '12** won the Analytical Chemistry Award.

The first annual **Richard Jochman Award** for excellence in organic chemistry was shared by **Kate Kaiser '13** and **Ha-**

**osen Wang '13**.

**Danelle Rolle '12** was presented with the **Father Matthew Kiess Award** for laboratory proficiency.

In General Chemistry, CRC Press Chemistry Achievement Awards were given to **Brooklyn Leitch**, **Ryan McMillan**, **Nicole Noyes**, **Alexander Reid**, **Stephanie Noyes** and **Michael Humbert**. Departmental Achievement Awards were given to **Joseph Wick**, **Graci Gorman**, **Kaitlyn Lauer**, **Angela Stevens**, **Trisha Johnson**, **Sean Pickthorn**, **Harry Gerdes** and **Miguel Mendoza**.

The departmental service award was given to **Ned Coloskey '11**, in recognition of Ned's contributions to lab development and support.

# Alum Notes



**Alicia Peterson**

**Alicia Peterson '03** has been promoted to Assistant Professor of Chemistry at CSB/SJU. Peterson teaches general and organic chemistry lecture and labs.

**Alexi Young '05** has finished his Ph.D. thesis in chemistry at University of Minnesota and is now working for 3M as a Biomaterials Scientist.

**Thu Nguyen '03** has defended her Ph.D. thesis in chemistry at Michigan State University. She has accepted a position as a research specialist at the Hillman Cancer Research Center, affiliated with the University of Pittsburgh Medical Center.

**Nigel Nagassar '00** has been promoted to Laboratory Director in Silliker's Minnetonka, Minnesota location. Nagassar's responsibilities will include oversight over quality control and assurance, safety, customer and employee relations and service/program development. Nagassar has experience in both Microbiolo-

gy and Chemistry divisions of the laboratory during his 9 years with Silliker. He started as a temporary Chemistry Technician and has advanced through Senior Technician and Supervisory roles in both Chemistry and Micro labs.

In addition to his degree from SJU, Nagassar also has a Masters degree in Management from the University of St. Thomas.



**Nigel Nagassar (Silliker photo)**