

Chemical Connections

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www.scu.edu/chemistry

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The official newsletter of the Department of Chemistry & Biochemistry

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Name Change

The SCU administration recently approved our changing the official departmental name to “**Department of Chemistry & Biochemistry.**” This title better reflects what the department currently is about, namely, educating both chemists and biochemists. The latter constitute the majority of majors in the department: of the total of 91 majors that we currently have, 46 are majoring in biochemistry. So we thought it most appropriate to recognize the growing interest in this sub-discipline by including it as part of our departmental name. Of course, those of us who grew up in a “Department of Chemistry” are finding it difficult to remember to append the “& Biochemistry” in our documents and official publications (and we suspect you will too!).

Grand Reunion – Mark Your Calendar

The inaugural “**Grand Reunion**” celebration for the university was a four-day celebration in mid-October. A wealth of activities occurred, one of which was an open house on Saturday, October 17, from 2–5 p.m. that allowed alums to renew acquaintances with faculty and staff and to meet some of our current departmental majors. It was great to see everyone who was able to join us on the occasion, and we’re looking forward to even greater turn-out of alums during the next Grand Reunion, which is scheduled for October 7-10, 2010. Mark your calendars now!!

To view the 2009 schedule:

<http://cms.scu.edu/cas/chemistry/alumni/index.cfm#>

Congratulations

Class of 2009

Shiraz Ali	Shawn Owens
Jeremy Black	Matthew Peterson
Bryan Donaldson	Tony Seidl
Scott Hickey	Kayla Silva
Merve Karabulut	Greg Stettler
Brian Keck	Kevin Sullivan
Mary Lucas	Andrew Vu
Amanda Major	Nick Welter
Ted McIntosh	Michael Yee
Ashley Ocampo	Melissa Zhao

DEPARTMENT NEWS

Chem Club Accolade

It was a busy year for the award-winning SCU Chemistry Club (last count: we have been selected for awards from the ACS for 17 years in a row!!). In the Fall we



once again partnered with the local section of the American Chemical Society at an annual *National Chemistry Week* event: a day of doing hands-on science demonstrations with children (and their parents) at the Martin Luther King Library in San Jose.

Later in the week we held our ever-popular *Mole Day Guessing Game* in the Daly Science courtyard. Participants were asked to guess the number of moles of items in large food-service style containers of snacks. Many students—as well as some faculty and staff members—were enticed by the lure of prizes such as a 4-lb jar of

Jelly Bellies and an enormous bag of pretzels. The individual who had the closest guess won the item. As usual, the Suljak lab managed to snag at least one of the four prizes!

Last Winter quarter we invented our own version of Mole Day: *Inverse Mole Day*, on 2/06. The event featured lots of great food and a Mole Poem contest. Faculty and students submitted a range of poems, from haiku to limericks; one student, our current Club Co-President, Christopher Rose, submitted the best poem:

*I awoke today in joy to see,
What the calendar had in store for me.
As I saw the date, I had to grin,*

In This Issue

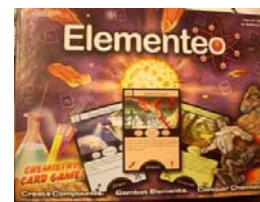
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Because inverse mole day had come again.
 The joy I felt, I could hardly contain,
 While thoughts of moles swept through my brain.
 I thought of Avogadro and his ilk,
 As I ate breakfast and poured some milk.
 And as the prospect of school arose,
 I adorned my inverse mole day clothes.
 A hat imprinted with the number 2,
 The number 6 on a shirt so blue.
 And on each leg, a number there,
 10 and 23 a perfect pair.
 I stood by the mirror and I must say,
 I was ready for inverse mole day.
 So I started to school on a lovely stroll,
 Careful to notice my world in moles.
 How many moles of leaves on the trees,
 How many moles does each have of seeds,
 How many moles of cars have passed by,
 How many moles of clouds in the sky,
 How many moles of paint on the street,
 And how many moles of fun awaits me...

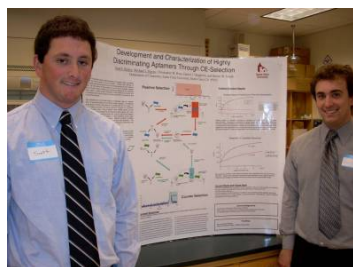
All day I dreamt of moles of moles,
 Till it was time to put dreams on hold.
 It was midnight, and it had gone so fast.
 My inverse mole day, now in the past,
 But before I strip of my mole day threads.
 I think of one more mole in my head,
 4.74×10^{-21} moles I finally say,
 The number of hours until next mole day.

During Winter and Spring terms we participated in other "Days": *Pies for Pi(π) Day* (3/14) and *Earth Day* when we traveled to the Ben Franklin Elementary School in Colma CA, to participate in *Family Science Night*, another community service event organized by the American Chemical Society. Several Club members enjoyed working at the games station where children tried their hand at Elementeo a new Chemistry -

related board game that was invented by a local high school student.



In the Spring term, we played host to about 30 local high school chemistry students when the Department served as a regional testing site for the *National Chemistry Olympiad*. We gave tours of campus to interested students at lunch and helped Dr. Brunauer, our advisor, set up and then clean up the laboratory for the lab practical portion of the testing.



In May we trekked to St. Mary's College in Moraga for the *21st Annual Undergraduate Research Symposium* (originally initiated by Dr. Brunauer and Dr. Sweeney in 1989 as the "Deck Conference"). The SCU contingent presented

about a dozen posters as well as an oral presentation at the event

By the summer, we were ready to enjoy a well-deserved rest!

Award Winners

Department of Chemistry 2009 Award Winners

CRC Freshman Chemistry Achievement Award

Awarded to a freshman student for outstanding performance in General Chemistry

Recipients: Maggie Abercrombie and Lindsay Hammons

American Chemical Society Polyed Award

Sponsored by the Polymer Education Committee of the American Chemical Society to honor outstanding achievement in Organic Chemistry

Recipient: Kanwal Palla

American Chemical Society Award in Analytical Chemistry

Given to an upper-division student for excellence in both lower- and upper-division analytical chemistry courses

Recipients: Michael Hayes and Christophe Rose

American Institute of Chemists Foundation Award

Awarded to outstanding senior chemistry major in recognition of a record of leadership, ability, character, and scholastic achievement

Recipient: Scott Hickey

Joseph Deck Award

Established in 1973, this award is given by the Chemistry Department faculty to the outstanding student majoring in chemistry who has excelled in studies and undergraduate research, extracurricular activities, leadership and generous tutoring of fellow students, while maintaining at least a B average.

Recipient: Merve Karabulut

Phi Lambda Upsilon

Membership-at-large in this National Honor Society in recognition of a record of leadership, ability, character, and scholastic achievements.

Nominees: Bryan Donaldson, Scott Hickey, Merve Karabulut, Matthew Patterson, Greg Stettler and Andrew Vu

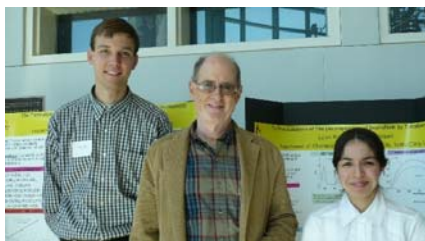
Goldwater Scholarship Winner

Junior biochemistry major **Michael J. Hayes** won a prestigious Goldwater Scholarship, an award for students expected to one day be leaders in the fields of mathematics, natural



Sigma Xi Research Symposium

The annual Sigma Xi Research Symposium was held this year in conjunction with the DeNardo Lectureship. Over 42 students were inducted into Sigma Xi this year, including 15 students who are performing research in the Department of Chemistry & Biochemistry:



Dr. Hoggard flanked by his research students – Sigma Xi presenters -Tony Seidl and Laura Pena.



Sigma Xi presenters Mary Lucas and Chris Rose

sciences, or engineering. He was one of 278 sophomores or juniors nationwide to receive the annual award, which is named after the late U.S. Senator Barry M. Goldwater. He plans to pursue a M.D./Ph.D. after graduation and continue in the field of medical research. (Source: SCU news release)

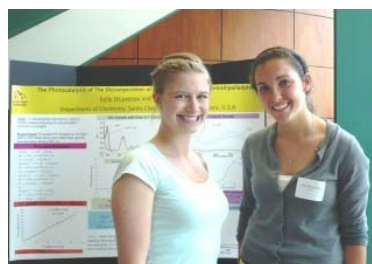
Hackworth Ethics Fellowship Winner

The Markkula Center for Applied Ethics at Santa Clara University has named **Kari Kjos**,

Biochemistry major, one of three Hackworth Fellows for the 2009-2010 school year. The Hackworth Fellowship is awarded to senior undergraduates who are charged with the responsibility during their fellowship year of promoting ethical reflection and reflective ethical action among their peers. Kari, a Biochemistry major and Economics minor from Mercer Island, Washington. Kari will develop programs for her peers on topics in health care policy and in medical ethics. She is the president of the Pre-Health Club. (Source: SCU news release)



Sigma Xi presenter Kelli DiLorenzo (right)



Students and faculty

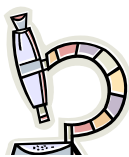
advisors noted below:

- Jeremy Black (Dr. Adalsteinsson)
- Timothy Nguyen (Dr. Adalsteinsson)
- Shawn Owens (Dr. Carrasco)
- Tony Seidl (Dr. Hoggard)
- Laura Pena (Dr. Hoggard)
- Brian Keck (Dr. Hoggard)
- Kelli DiLorenzo (Dr. Hoggard)
- Rachel Gilbert (Dr. Hoggard)
- Ted McIntosh (Dr. Hoggard)
- Bryan Donaldson (Dr. McNelis)
- Greg Stettler (Dr. McNelis)
- Mary Lucas (Dr. Suljak)
- Chris Rose (Dr. Suljak)
- Michael Hayes (Dr. Suljak)
- Scott Hickey (Dr. Suljak)

Congratulations to all of our new inductees.

Miscellany

- The number of departmental majors continues to increase. We now have some 91 declared majors in our department.
- Our graduating class numbered 21 talented students this year, a reflection of the growing interest in majoring in chemistry and biochemistry. Incidentally, 6 out of 21 merited membership in Phi Lambda Upsilon, 12 of them are now members of Sigma Xi and most of them have partici-



pated in research. Their pictures and future plans are available on the web at <http://www.scu.edu/cas/chemistry/students/Senior-Brochure.cfm>

- The department has expanded its summer school offerings by adding the first course in biochemistry to the courses in general chemistry and organic chemistry that have been available for a number of years.

Seminar Program

Our seminar program continues to welcome speakers who cover a wide range of scientific topics of interest to our faculty and students. Overseen by Dr. Michael Carrasco (2008-2009) and by Dr. Amelia Fuller (2009-2010), the program included the presentations listed below.

Term	Speaker/Affiliation	Title
Fall, 2008	Dr. Robert S.H. Liu University of Hawaii	Can Dogs See Ghosts? The Chemistry of Vision
	Dr. Garon Smith University of Montana	Honeybees: Flying Chemical Detectors
	Dr. Derek Mclean KAI Pharmaceutical	Peptide Modulators of Protein Kinase C- Discovery and Development of a Novel Drug Class
	Dr. Maria Nagan Truman University	Computational Studies of RNA
	Dr. Swapain Jain Boston University	Nucleic Acid Structure and Its Interactions with Small Molecules
	Dr. Sheila Jaswal Stanford University	Mapping Protein Folding Landscapes to Understand Function and Disease
Winter, 2009	Dr. Stephen Martin UT Austin	Preorganization in Biological Systems: Are Conformational Constraints Really Worth the Energy
	Dr. Annelise Barron Stanford University	Robust, Non-Natural "Peptoid" Mimics Of Antimicrobial Peptides For Potent, Selective Bacterial Pathogen Killing
	Katharine Rawls UC-Berkeley Iana Serafimova UC-San Francisco	Progress by two SCU graduates toward the Ph.D. degree
Spring 2009	Dr. Xi Chen UT-Davis	Chemoenzymatic Approaches for Chemical Glycobiology
	Dr. Joe Langenhan Seattle University	Enhancing the Potency and Selectivity of Drugs Using Oxyamine Glycosylation
	Dr. Scott Lokey UC Santa Cruz	Unlocking the conformational basis of membrane permeability using cyclic peptide scaffolds
	Mr. Scott Hickey Santa Clara University	Can We Develop Aptamers that Distinguish Between Post-Translationally Modified Protein Targets
Fall 2009	Dr. Kevin Shea Smith College	Applications of Cobalt-Alkyne Complexes in Organic Synthesis

	Dr. Ron Zuckermann The Molecular Foundry	Bioinspired Polymers as Nanoscale Building Materials
	Dr. Marcin Majda UC Berkeley	Antibody-Antigen Exchange Equilibria in a Field of an External Force: Design of Reagentless Biosensors.”
	Dr. Xinnan Zhang Symyx	High-Throughput Polymer Synthesis at Symyx Technologies
	Dr. Paul Wender Stanford	Some Global Problems in Chemistry, Biology, and Medicine

Faculty News

Three of our faculty members will benefit from sabbatical leaves during the 2009–2010 academic year. Pat Hoggard will be spending the entire year doing research in Italy, and Amy Shachter will spend her one-year of sabbatical leave doing research and writing here on campus. Brian McNelis will also stay on campus to pursue his scholarship during his sabbatical leave for the winter and spring quarters.

Reflections from a first year faculty:



Amelia Fuller

I survived my first year as a professor at Santa Clara University. Actually, it was my first year as a professor anywhere, and I am convinced that SCU is the right place for me. One of my

biggest challenges this year has been learning the quickest routes from one lab to the next around the Daly Science 100 building—all of the labs interconnect, so depending on your destination, taking the hallways can only slow you down. I am sure that there are still corners of the labyrinth I haven't yet explored, but I think I'm getting the hang of it.

As a morning person, I was happy to take on the 8:00 AM time slot for my chemistry 31–33 classes this year, as well as a couple of morning labs. I quickly learned that students are far less enthusiastic than I am at that hour, however. I do remember the challenges of getting to sleep in student housing, so I think we'll all be a little happier when I move to a later time slot next year. Nonetheless, I was impressed by the students who consistently came to class (even when they apparently hadn't had time to change out of their pajamas), and answered my questions and asked their own; they certainly kept me on my toes, and I'm sure I learned at least as much as they did this year. The best part of my year was getting to know the students during office hours and in the lab. So many have impressive and diverse interests and activities, and they aim high in their goals. I am

really excited to see them make progress towards and achieve these goals in the coming years.

Outside of the classroom, it's been a great year as well. I got to move into a brand new research lab space in the Alumni Sciences building and fill it up with the equipment and materials I'll need for my research projects. So far, things are going smoothly, and I've been able to attract five SCU students into my research program, all of whom have done a great job. I'm also grateful for the really fantastic support of the rest of the faculty and staff in the department who help to make SCU a great place to work. I'm definitely looking forward to year two!

New Faculty



For the second year in a row, the department has been successful in recruiting a new assistant professor onto its faculty. Our newest hire **Korin Wheeler** joined us in the fall. Korin most recently was a postdoctoral fellow at Lawrence Livermore National Laboratory, where she

studied novel proteins from extremophilic organisms. She earned her B.A. degree at New College of Florida and her Ph.D. at Northwestern University prior to assuming her postdoctoral position. Korin already is co-author on five publications, has one submitted for publication, and another in preparation.

Trained in bioinorganic chemistry, Dr. Wheeler will initially be teaching in our biochemistry sequence. She plans to develop a research program built around investigations of the environmental implications of interactions of inorganic nanoparticles with proteins and bacteria. The results are expected to have significant societal implications in terms of assisting regulators and nanoscientists in the design of safe, effective products with nanomaterials. Besides teaching, Korin is busy getting her research lab set up.

Please make it a point to meet Korin during your next visit to the department!

News from Thorsteinn Adalsteinsson -

Last year was one of expansion, in terms both of the number of research projects and of the students actively involved in them, with the latter figure increasing from two



to nine during the academic year. **Jeremy K. Black**, graduated last June, and a manuscript entitled "Phase transitions of hexadecane in poly(alkyl methacrylate) core-shell microcapsules", based mainly on his work,

with additional contributions from Lauren Tracy, Conor Roche, and Paul Henry, has been submitted for publication. Another project from last year is also nearly ready to be submitted for publication. This project, which awaits availability of additional instrumentation for completion, has been spearheaded by Timothy Nguyen. It focuses on the thermal properties of eutectic nitrate salts, which are potential heat-transfer agents in thermal-solar power plants. Finally, a collaborative project between my group and those of Brian McNelis and Rich Barber (Physics) has culminated in a publication that will appear in *Solar Energy Materials & Solar Cells*. The collaboration is ongoing and promises to continue to yield productive results. An additional collaboration, with Annaliese Barron (Stanford), has been initiated this past year.

Last year was the first in which three first-year students were asked to join the group, the goal being to get them



involved in research early in their academic careers. The three had achieved excellent

track records in Chem 11 (General Chemistry I), were recruited and contributed to the group research program by testing whether HPLC and UV-Vis instruments were appropriate for monitoring the progress of polymerizations of interest to the group.

We welcomed a visiting student from the University of Münster last summer. She came specifically to learn how to use Scanning Electron Microscopy (SEM) to capture images of polymer colloids and added a distinctly international flavor to our group.

Eight students currently compose the group, and we have great expectations for continuing to obtain exciting results from their efforts. This number means that we are bursting at the seams with regard to space, but this size makes for exciting times in research!

News of former group members (escapees):

Anthony Pham (Chemistry 2008) is in the process of

applying for pharmacy school. He is also considering Master's programs as an alternative.

Emily Fette (Chemistry 2008) sent a postcard from Alaska. After finishing her time with the Jesuit Volunteering Corps (JVC) in Houston, she moved on to Anchorage where she is volunteering with the American Red Cross. There she teaches first aid/CPR, fire preparedness and HIV/AIDS education classes to the local community. She is also cooling down after the very hot, humid and hurricane infected Houston.

Jeremy Black (Biochemistry 2009) is seeking employment with chemical industry in the Bay Area.

Steven Suljak's research group continues its efforts to develop aptamers to distinguish between peptide variants with specific post-translational modifications. In addition, Chris Rose has initiated a productive collaboration with John Birmingham's group in physics investigating the role of GABA in muscle contractions in crabs. Four group members attended the *March 2009 Pittsburgh Conference in Analytical Chemistry* in New Orleans, where Scott Hickey and Mike Hayes presented a poster on their recent work. In addition, several members presented talks



and posters at this year's *ACS Undergraduate Research Meeting* held at St. Mary's College. Two seniors graduated from the lab this past May. Mary Lucas (biochemistry) is pursuing opportunities in pharmaceutical sales. Scott Hickey (biochemistry) is starting Ph.D. work in chemistry

at the University of California, Berkeley in the fall.

We are fortunate to see local group alumni from time to time. Christian Paquet has completed his second year of medical school at USC, and Nicole Van Groningen will be starting her first year at UCLA this coming fall after completing her backpacking tour of Guatemala. Brian Jameson (University of California at Santa Cruz, chemistry) and Danny Daugherty (University of California at Davis, physiology) are continuing their respective graduate studies.



News from Alumni

Editor's note: We need to hear from more of you. Don't be shy about writing!

Alum Retort from Mr. Al Verstuyff

(This edition of the newsletter doesn't contain a reminiscence by an ex-student from the department. We know there are some of you out there who have fascinating stories to tell about your experiences as a student here and what your education at SCU has meant to you. Rest assured that there are many alums who would find your musings of interest. So please put your computer to work or, in the "old-fashioned way," put pen to paper!)

Editor's note: Although Al Verstuyff did not commit to create a Reminiscence ala Al Cribari, we thank him for putting pen to paper and sharing his memories of days in the Department of Chemistry at Santa Clara University.

I was at SCU 1966–1970 during the Vietnam Era and my best reminiscences were football games at Buck Shaw, intramural basketball, and a lot of drinking that would be frowned upon today! The Vietnam Era at SCU and in the Bay Area was not a wonderful time.

Deck, Sweeney, Pfeiffer and Sheehan were the chemistry department. I told Pfeiffer when I saw him at Larry Nathan's retirement that Pfeiffer was one of the best teachers I had in school (SCU, Nevada and Utah)—he made students really think!! Larry and Dr. John Nelson, my thesis director, were grad students at Utah.

Anne Doeltz Farrell probably has better Sweeney stories as she worked with him for many years. Anne, thanks for helping me pass German class! I had to take another year of German in grad school and still never learned anything other than to pass reading exam! I can speak 100 words of Spanish from working in Ecuador and 100 words of Indonesian Bahasa from working in Indonesia!

Dr. Sheehan was a fine man, good Catholic who taught CCD for many years, but would rank tied for third with Sweeney as a teacher. Pfeiffer was outstanding and Deck gave us an appreciation for heterocyclic chemistry!

In closing, I want to recognize and acknowledge Dr. Brunauer's leadership of SCU's outstanding Student Affiliate Chapter for nearly 20 years!!

Tracy McCarley

writes that she directed a mass spectrometry facility for 12 years at LSU. It wasn't exactly what I had imagined for my career, but it turned out to be very fulfilling and always interesting. Although I had opportunities to pursue other avenues while I was at LSU, I stayed because I enjoyed my interactions with the faculty and students and involvement in university research. About three years ago I left LSU to stay home with my three young children. It was a struggle to come to that decision, but once I did it felt absolutely the right thing to do. I always stayed busy at work, and now I am always busy at home. I am very involved with volunteering at my kids' school, I am the treasurer of the Chlorine Chapter of Iota Sigma Pi, and I work with various volunteer organizations. I have also found a way to stay involved in research by continuing a long-time collaboration with a polymer research group at the University of Florida. I perform MALDI mass spectral analysis on their conducting polymers, confirming repeats and identifying end groups, which gives them valuable information for their synthetic endeavors.

Christina Estill

Wrote:

I am currently working on completing my master's and California teaching credential. I am hoping to be teaching chemistry in a classroom in the fall. As for the last 2+ years I have been working as a para-educator for the Las Lomas Elementary School District in Menlo Park. I have been coaching women's basketball at Los Gatos High School for the past 5 years and also coach the class of 2013 for the San Jose Ninja's.

Alumni Shadowing Program

If you are interested in participating in the ALUMNI SHADOWING PROGRAM and help students explore career options, please contact Elizabeth Thompson in the Career Center at ethompson@scu.edu.

Heartfelt Thanks

**to alumni and donors for
their kindness and loyalty,
for your donations, cards, letters,
email messages, and visits.**

Contributions

A gentle but important reminder that contributions you make as one means of giving back to Santa Clara University and the Department of Chemistry & Biochemistry provide resources to support a variety of needs, most of which are directed toward students. Included among their diverse uses are defraying the expenses of students who are attending scientific conferences, purchasing equipment to support teaching laboratories and scholarly research, and paying banquet expenses for our majors when they are initiated into honor societies such as Sigma Xi. Please seriously consider making a contribution for the betterment of our department.

An envelope has been enclosed in the newsletter for the convenience of those of you receiving it via surface mail. A form that allows you to select a particular purpose for your donation is provided below.

Thanks in advance for helping us meet our financial needs and creating an even more vibrant department as a result!

You can mail your gift to

Chemistry & Biochemistry Department, DS 113
Santa Clara University
500 El Camino Real
Santa Clara, CA 95053.

You can also make a gift online at:

www.scu.edu/giving. Follow the link to **Make a Gift Online** and in **Other Designation**, put **Joseph Deck Fund** or **Chemistry Gifts**.

Thanks in advance for helping us meet our financial needs!

Name _____

Address _____

Email _____

Amount of gift _____

Please apply this donation to:

_____ Joseph Deck Fund (for student research)

_____ Chemistry Gifts

Newsletter Distribution in the Future

This newsletter is being distributed via surface mail and electronically to those who have authorized us to do so. We again are asking that you provide us with a current email address if you are interested in receiving the electronic version. If so, send your address to Lourdes Barretto (L1Barretto@scu.edu).
