AUGUST 2008

CHEMIGRAM

A NEWSLETTER FOR BRIGHAM YOUNG UNIVERSITY CHEMISTRY ALUMNI

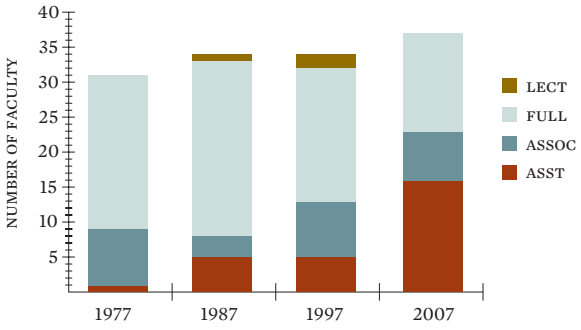
Message From the Chair

PAUL B. FARNSWORTH

In my chair's message last year I noted with regret the loss of experience in the department that was represented by the retirements announced in the newsletter. My respect for my retired colleagues has not waned, but this year I would like to look at another aspect of the impact on the department of the steady stream of retirements that we have seen in recent years. We have evolved into a very young department. The plot below illustrates the magnitude of the youth movement that we have seen over the past three decades.

In 1977 the university catalog listed only one assistant professor in the department. In 2007, the number was sixteen. The dramatic changes represent not only the loss of experience that I have already noted, but also a large influx of fresh ideas, perspectives, and talent. One of the strengths of our department is the willingness of the senior faculty to hire assistant professors who are more talented and better prepared than they were, and then to "raise the bar" for the new hires. We older faculty expect the young professors to be better teachers and researchers than we were, and they respond. In 2007 the department set two important records: we reached an all-time high in external funding, surpassing $6 million, and we recorded the highest average student ratings of teaching in the department's history. Our young faculty members made significant contributions to both accomplishments.

DEPARTMENT COMPOSITION



New faculty members are important in another respect. They are typically the driving force behind curriculum changes and innovations in teaching. They arrive at BYU with fresh experience as graduate students and postdocs at other high quality universities, and they often combine that experience with that of having been undergraduates in our department. They know what worked for them as they entered graduate school, and can see where we can make improvements. Our young faculty members are our best hedge against stagnation. Their ideas ensure that we continue to offer first-rate educational experiences to our students.

From the perspective of the alumni, the large number of young professors means that if you haven't visited the department recently, there is a lot going on in the department that will be new to you. Our annual homecoming activity this coming fall would be a good time for you to drop by for a visit. We have an enjoyable evening planned that can only be made better by your presence. I'll hope to see you in October.

BEST WISHES,
PAUL B. FARNSWORTH

New Faculty

DR. JAMES E. PATTERSON is an experimental physical chemist who uses non-linear vibrational spectroscopy to study the molecular structure of interfacial systems. His research interests can be summarized in a single question: What makes things stick? His goal is to understand how molecular structures at interfaces control interactions between different materials. Two specific areas of interest are polymer adhesion and retention mechanisms in chromatography. In both cases, it is the molecules at the interface that control the performance more than the molecules in the bulk. Subtle structural changes at an interface can lead to dramatic changes in performance. However, most spectroscopy techniques can't distinguish between surface and bulk molecules. Vibrationally resonant sum-frequency generation (VR-SFG) spectroscopy allows his group to determine orientations of molecules located at buried interfaces. The ultimate goal of his research program is to establish structure-function relationships that will allow for rational design of the next generation of adhesives and chromatographic stationary phases based on molecular considerations.

James received his B.S. and M.S. degrees from BYU before completing his Ph.D. at the University of Illinois at Urbana-Champaign in 2004. At UIUC, he helped construct one of the first broad-band VR-SFG systems and studied the molecular-level response of self-assembled monolayers to rapid mechanical compression. He did postdoctoral work at the Institute for Shock Physics at Washington State University studying the shock initiation of high explosives. James' wife Emily also has a M.S. in chemistry from BYU (they both defended the same day). She did atmospheric sampling research with Dr. Eatough. She is currently a homemaker working to raise their five children; Elizabeth (9), Ruth (7), Edward (5), John (3) and Jared (6 mo). As a family, they enjoy hiking in the canyons, gardening and spending time together.

DR. JEFFREY H. MACEDONE is no stranger to the BYU Chemistry Department. He received his Ph. D. from Brigham Young University in Analytical Chemistry. He later accepted a post-doctoral appointment with Paul Farnsworth studying laser-induced fluorescence and inductively coupled plasma mass spectrometry. Jeff has a natural love of people and chemistry, and has always wanted working with people in chemistry to be an important element of his career in chemistry. His scientific interests are based in atomic and molecular spectroscopy. Professionally he is interested in learning processes, student study habits, academic technologies and digital native/millennial student paradigms and trends. Jeff is married to Randalynn Meldrum and they are the parents of Benjamin (8), Noah (6), and Caitlyn (3). They love being together and going on "family adventures." Jeff is interested in audio recording, music composition, electronics, and hunting for scorpions (they have fluorescent skin).

Faculty Awards

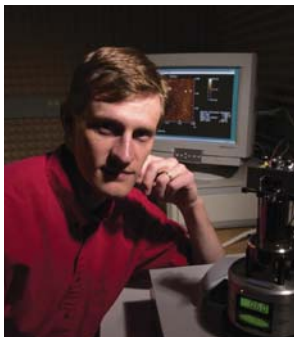
STEVEN R. GOATES was presented with the inaugural Joseph K. Nicholes University Citizenship Award in the Department of Chemistry and Biochemistry at the Department's annual award banquet, held on April 12, 2007. The award consists of $10,000 placed in an unrestricted account to support the recipient's acivities on campus.

The Joseph K. Nicholes award was established by an emeritus faculty member who wished to promote university citizenship in the broadest sense among the faculty in the Department. The document establishing the award reads in part:

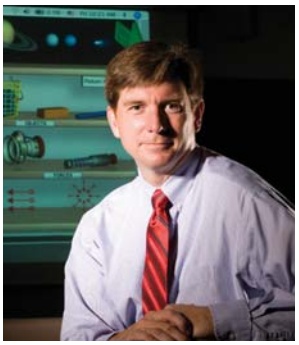
"The recipient of the Chemistry & Biochemistry Joseph K. Nicholes University Citizenship Award is to be a faculty member in the Department with clear understanding of and dedication to the highest purposes of Brigham Young University. This faculty member will see a balance between the intensive, rigorous, and specific study in the major and the need for comparable attention and effort in religious and general education."

Joseph Nicholes, for whom the award is named, was chair of the Chemistry Department from 1946 through 1955. Nicholes told new faculty: "Remember that for your student, you are the university." The enthusiastic applause from both students and faculty that followed the announcement of

Steven Goates' name served as a resounding endorsement of his selection as the first recipient of the award. For Goates' students, the univeristy is a challenging, yet nurturing place. Students in his classes are presented with rigorous, well-designed experiences that emphasize critical thinking over rote memorization. Goates' interest in his students extends far beyond chemistry. He patiently counsels students in all aspects of university education and consistently encourages them to challenge themselves beyond the limits of their majors. He has also been active at the university level in promoting and fostering general education. Congratulations to Steven Goates on this well-deserved recognition.



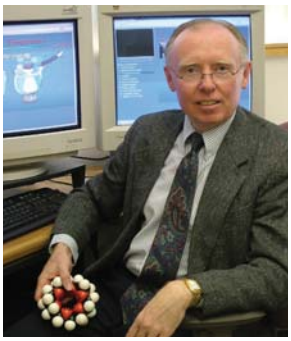
ADAM T. WOOLLEY received the Presidential Early Career Award for Scientists and Engineers, the government's highest honor offered to young scientists. He was honored for his research on cancer marker proteins. It is the first such award given to a BYU professor. The National Institutes of Health nominated Dr. Woolley for the award and funds his work on the development of miniature devices that separate and analyze proteins. The NIH-funded project aims to enable these devices to detect liver cancer at early stages. The award was established in 1996 to honor "the most promising researchers in the nation within their fields." The award comes with up to five years of funding from the NIH to further his research on miniature protein analysis devices. Dr. Woolley also received the Division of Analytical Chemistry Award for Young Investigators in Separation Science from the American Chemical Society for this same work.



BRIAN F. WOODFIELD was selected to receive a 2008 Pirelli "Internetional" Award, the world's first internet multimedia award aimed at the diffusion of scientific and technological culture worldwide. These annual awards are given to recognize the best multimedia presentations oriented toward physics, chemistry, mathematics, life sciences and science communication conducted on emerging online communication platforms that go beyond a simple web site. Dr. Woodfield won the award for his virtual chemistry laboratory software development research. Virtual ChemLab contains all of the amenities of a real laboratory setting, including limitless supplies of expensive or hazardous substances to which students usually have infrequent access. With the click of a mouse, students can set up, conduct simulations and view the outcome of each chemical combination or experiment. The simulations have increased student performance in BYU organic chemistry labs by 30 percent and have also been implemented in more than 20 colleges and universities in the United States and Canada.

PAUL B. FARNSWORTH was recognized with the Elsevier/Specrochimica Acta Atomic Spectroscopy Award for 2006. This award is to honor the most significant articles published in the Journal during a calendar year. He published a series of three articles characterizing the supersonic expansion into the first vacuum stage of an inductively coupled plasma mass spectrometer. His research group successfully imaged the plasma composition near the sampling cone. Dr. Farnsworth was assisted in his research by his students W. Neil Radick, Jordan B. Olsen, Rebecca V. Nielson, Jeffrey H. Macedone, and Andrew A. Mills.

DANIEL E. AUSTIN has been awarded the American Society for Mass Spectrometry's 2008 Research Award for his work in the quantitative detection of large biomolecules using ion trap mass analysis with electrodynamic post-acceleration. The purpose of the award is to recognize academic research by young scientists in mass spectrometry. His research will dramatically increase the detection sensitivity for large ions and extend the mass range for quantitative analysis by an order of magnitude. He was presented the award at their national meeting in June 2008.



JOHN D. LAMB was selected as a Karl G. Maeser Professional Faculty Excellence Award in Research and Creative Arts. This award was given in recognition of his outstanding research and creative accomplishments. Dr. Lamb is a dedicated and vigorously innovative teacher and scholar. He began developing multimedia teaching materials long before there were "tech" rooms—but he never lets media get in the way of his interaction with students. He developed the interactive CD ChemTutor, his student study groups influenced its adoption in introductory chemistry classes, and he is now developing learning modules. He is a model of life-long learning. In class he makes frequent reference to literature, music, and art, and is himself a talented amateur artist.

Retirements

DOROTHY SIEBERT retired from BYU after over twenty years at BYU, the last eighteen of which were in the Department of Chemistry and Biochemistry. She worked as administrative assistant for three chairs and provided excellent service to all three. Dorothy brought exceptional dedication and professionalism to the job, and she cultivated those same qualities in those whom she supervised. Because of her positive interactions with other staff and administrative employees across campus, Dorothy deserves much of the credit for the high regard with which our department is viewed across campus.

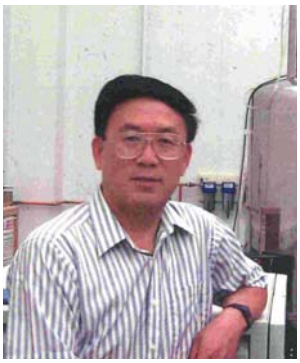
Dorothy served as the first-line advisor for thousands of students who came to the department office for help. Most of the students were anxious, many were impatient, and a few were downright rude. Regardless of student attitudes, Dorothy responded to them with respect and patience. She was an excellent example of Christ-like behavior on the job.

Dorothy's positive influence on the department will be felt for years to come. We wish her the best in this new phase of her life and hope that she will take the time to indulge herself in some long-deferred personal activities.

S. SCOTT ZIMMERMAN'S contributions to chemical education, technical writing, computer applications, and research have been substantial over his career. Scott decided to major in chemistry when he was a junior in high school and never really thought of doing anything else after that. In 1969, he received a B.S. degree in Chemistry with a minor in Mathematics from BYU, and in 1973, received a Ph.D. in Molecular Biophysics from Florida State University, where he developed his skill and enduring interest in modeling biochemical structure and function. During his career, he tackled a variety of important theoretical investigations into protein interactions. Following his graduate work, he spent three years as an NIH postdoctoral fellow at Cornell University and then a year as an assistant professor at the University of Arkansas before being hired away to BYU in 1978.

Scott has a national reputation in chemical education. He has been a major contributor to the national discussion about computers in education through publications, organization of and participation in many symposia, and the creation of several clever computer-aided instruction programs. He was among the first to have students do modeling calculations in their class work. He also gave long service on the Examination Committee of the American Chemical Society. As a teacher he has excelled, adjusting his approach to fit the needs of students in the entire range of courses from the most basic, general education to graduate level courses, as well as religion. He brings students into the discovery process, even non-science students; his novel design of a home study research program attracted wide attention. In upper division courses, he presented students real data for analysis, and sometimes chose experiments that contradicted the textbook to provoke them to critically examine results and to emphasize the dynamic discovery nature of science. One student comment captures his nature: "Dr. Zimmerman is a natural teacher, absolutely excellent! Tremendous enthusiasm, great testimony, and wonderful sense of humor."

Beyond science, Scott pursues many interests with passion. He is an avid runner and cyclist, having run 14 marathons, including the Boston Marathon, completed 7 triathlons, 4 century (100-mile) cycling races and one double century. He has especially enjoyed running and biking with his children, four of whom have completed marathons. He is devoted to his children (seven) and grandchildren (seventeen), and he is deeply proud of Beverly, praising her often to his students and others.



DU LI retired from our department in the fall of 2007 after working as the director of our NMR facilities for more than 15 years. Dr. Li was a Professor of Chemistry at Lanzhou University in China, where he also served for a time as Chair of Chemistry. He came to BYU in 1989 as a visiting professor and received his PhD working with Noel Owen in our department. He remained with the department providing a valuable service for NMR users. He oversaw the improvement of our facilities from housing 200 and 500 MHz instruments to our current facility containing one 300 and two 500 MHz instruments. In addition, Dr. Li was responsible for teaching hundreds of students to use the instruments. Dr. Li collaborated with groups from all over the world and published more than 100 manuscripts, including 26 manuscripts with Noel Owen. Much of this work focused on elucidating the chemical structures of compounds isolated from natural sources. In addition, he helped improve methods for acquiring INADEQUATE spectra (INADEQUATE spectra are ^{13}C-^{13}C correlated spectra and are extremely useful in determining C-C bond connectivity).

RESEARCH IN EARLY DETECTION AND DIAGNOSIS OF DISEASE

A group of Chemistry and Biochemistry Department faculty members have been involved in research to improve the early detection and diagnosis of disease. In a recent issue of the Journal of the American Chemical Society, Matthew Asplund and Matthew Linford introduced a method for making a silicon chip that captures protein antibodies from fluids. They have applied to patent their process of using a laser to simultaneously burn through a one molecule thick nonstick surface and drill 10,000 tiny wells into a silicon chip.

This procedure is performed by a laser passed through an optic lens that splits the beam into 10,000 beams and focuses these beams on the chip surface. In just four nanoseconds – less time than it takes to blink – each laser beam burns through the non-stick coating and drills a tiny well into the silicon.

In this study, the research team demonstrated that these wells can capture proteins intact, significant because illnesses can be detected by the presence of specific protein antibodies in the bloodstream.

As the technology develops, the chips could possibly be prepared so that different sections detect different diseases. For example, when a person picks up a virus, the body's immune system produces a protein antibody that is custom-made to latch onto the virus and block it from doing any more damage. To capture an assortment of antibodies in a single test, the researchers would simply need to anchor different target viruses or antigens in different wells on the chip. The potential is that a single blood sample could be screened for thousands of conditions at once.

The lead author on this paper is Feng Zhang, a BYU student pursuing a Ph.D. Zhang hopes that their current work could contribute to initiatives to map proteins in the human body and identify their role in the body's functioning. Called proteomics, this field of research holds great promise but is not without difficulty given the vast number of proteins and their ever-changing nature. Other co-authors on the paper include fellow Ph.D. student Richard Gates, Prof Richard Watt, and several University of Utah collaborators.

Last November, Prof Adam Woolley received the Presidential Early Career Award for Scientists and Engineers for his research on detecting cancer marker proteins. His research is developing new tools for analyzing proteins, focusing now on the alpha-feto protein (AFP) that correlates with liver cancers. AFPs aren't all bad – a concentration of the protein in a mother's bloodstream is actually a fetal wellness marker during pregnancy. In a non-pregnant patient, however, enough AFPs in the bloodstream denote liver cancer.

"We envision taking a blood sample and using the miniaturized tools we're developing to detect AFP and quantify it," Woolley says. "In an ideal world, you'd go to the doctor's office for a healthy checkup, and this would be part of a routine blood-sample analysis." The analysis would be performed entirely on one transparent chip, no larger than 2 by 3 inches – a "next-generation device" that Woolley says could revolutionize the expense and frequency of cancer screening.

Embedded in the core of this plastic chip are tubes so tiny they look like scratches. "The way we make them actually uses some of the tricks they've developed for making computer circuits," Woolley says. Utilizing the clean room in the Clyde Building's Integrated Microelectronics Lab, Woolley and his students imprint grooves into a piece of plastic. Then, through a novel bonding technique developed by Woolley and former student Ryan T. Kelly (BS '01), the imprinted plastic is bonded to another piece of plastic, encasing the grooves and creating tubes inside the chip – into which blood serum samples can be inserted for testing.

But that's not all, Woolley and collaborating BYU professors have developed ways to put "functional elements" inside those strand-of-hair-sized tubes, elements that function as sieves, sifting out everything in a blood serum sample except the protein of interest – AFP. What's left is a nearly pure, concentrated, and countable sample of AFPs, which could make the difference between beginning cancer treatment immediately or 10 years too late.

These above research groups are developing the medical tools of the future to improve the way medicine is practiced. Their work will lead to cleaner and faster ways to simultaneously screen for multiple diseases.

Mentored Student Research

During the past several years many of our alumni have made significant contributions toward the support of undergraduate student research projects. The following paragraphs contain summaries of some of this research as described by the students who have received the awards.

"THERMODYNAMIC PROPERTIES BY NANOALUMINA,"
Rebecca Olsen mentored by Julie Boerio-Goates

My research this semester has been focused on understanding a solid-state nanosynthesis reaction. I have explored the use of many different starting materials and tested the effects of parameters such as baking temperature and time on both the completeness of the reaction and the size of the resulting nanoparticles. I have performed analyses (x-ray diffraction, differential scanning calorimetry, thermo gravimetric analysis, and transmission electron microscopy) to characterize the product and worked to determine how to best reduce

any impurities. Through this research, we have come to a better understanding of the mechanism of the reaction and have successfully produced many different nanomaterials such as aluminum, nickel, magnesium, cerium, praseodymium and zinc oxides ranging in size from 3 to 25 nm. The results of this research have led us to a better understanding of the unique properties of nanoparticles and how we can utilize them.

"DETERMINATION OF THE EFFECTS OF PHOSPHORYLATION OF PHOSDUCIN-LIKE PROTEIN 1 AT SERINE 293 ON G PROTEIN BETA-GAMMA DIMER ASSEMBLY,"
Rebecca Plimpton mentored by Barry Willardson

The funding provided by my URA allowed me to continue my research on phosducin-like protein (PhLP) and its role in G protein signaling. The G protein signaling pathway is a cascade of molecules that respond to extracellular stimuli, such as hormones and neurotransmitters, and in turn regulate a variety of physiological processes including immune response, sensory processing, and embryonic development. Thus, an increased understanding of the G protein signaling pathway gives rise to better understanding of diseases related to these physiological processes and potential drugs and treatments for such diseases. PhLP's role in this pathway is to facilitate the assembly of an essential protein complex. To better understand how PhLP interacts with this protein complex, I conducted experiments that measured the rate of

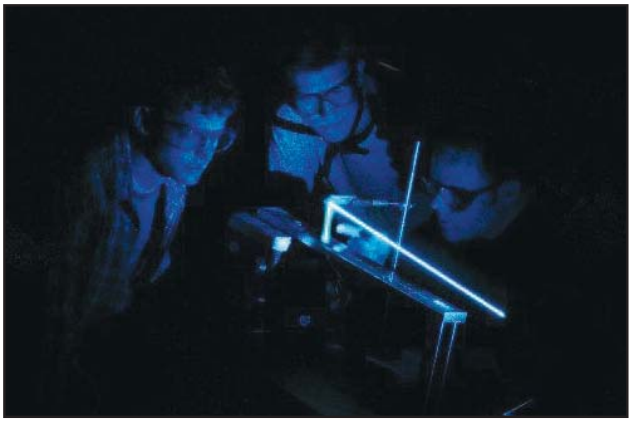
protein assembly as facilitated by a series of PhLP variants I created in the lab. These variants were mutant forms of PhLP that enhanced or prevented protein assembly. As the mutations I introduced were all in the same region of PhLP, they allowed me to determine the contribution made by this region to the binding interaction between PhLP and the G protein complex.

"INVESTIGATION OF THE TEMPERATURE GRADIENT IN SOLVATING GAS CHROMATOGRAPHY,"
John-David McElderry, mentored by Steven Goates

Separation of chemicals by chromatography is a widely used method in all fields of chemistry. It is the key method to purification and analysis of a given compound. There is much interest in creating chromatographic methods that perform fast separations with high efficiency. My research involves the analytic study of a new technique called solvating gas chromatography (SGC). SGC is a variant on supercritical fluid chromatography which uses larger pressure gradients to create higher flow rates and faster sepa-

rations. SGC is limited in its utility because of a trade off between high-flow rates and separation efficiency. It is well established that efficiency also has a strong dependence on temperature and can be used to counter the effect of the high-flow rates on efficiency. Therefore, to improve efficiency we must understand how the flow varies along the column so that temperature can be varied accordingly.

Few attempts at studying column flow by non-invasive means have been done. In my research I have used laser-induced fluorescence (LIF) to observe probe molecules through the column, which is a novel technique. I have been successful at non-invasively observing the velocity of these probe molecules at any point in the column. Throughout this semester I have applied several positive temperature

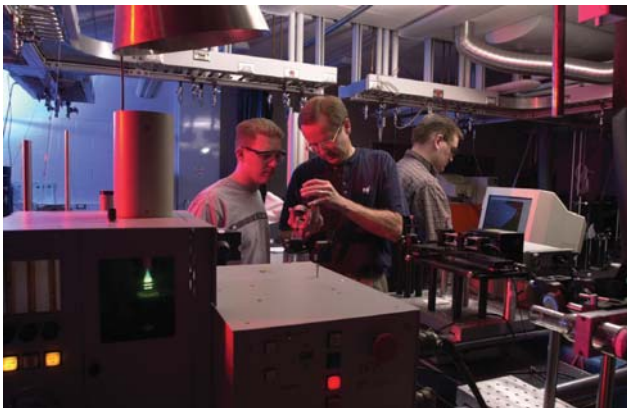


gradients on SGC columns to increase the volatility of highly retained molecules. This means that the column is cooled at the inlet and heated at the outlet. Since the molecules do not get stuck onto the column for an extended period of time the separation is more efficient than previous isothermal separations. I was successful in obtaining one heating arrangement that improved efficiency. This is very promising because it shows that by varying temperature along the column efficiency can be greatly enhanced. In light of this accomplishment, much more work is needed to apply other temperature gradients to arrive at optimal conditions for a wide variety of chemicals.

"IMPROVED DETECTION OF PROTEINS USING TWO-PHOTON EXCITATION OF NATIVE FLUORESCENCE,"

Spencer Dickson mentored by Paul Farnsworth

When a laser is shined on certain types of proteins, the proteins are capable of absorbing and then releasing the light. They produce a detectable response, proportional to the concentration of protein in solution. Minute concentrations of proteins can be measured by this method. Knowing the amount of a protein present in a sample has useful application



in the study of cancer cells, or new drugs and their interactions with the body. The goal is to build even more sensitive instruments, capable of detecting even the slightest trace of a protein. My research this semester focused on eliminating the factors that made detection difficult, and on aligning and refining the instrument to be able to more clearly see a signal from the protein and not from some interference. One breakthrough came when we realized that our solutions were degrading over time; the protein in solution was fusing to the walls of its container. We then prepared new solutions daily and obtained much better and more consistent results. Another successful procedure was cleaning the delicate optics—the lenses, objectives, and mirrors that need to be sensitive to small changes in the light passing through them.

An Invitation from Friends, Students and Faculty of the Department of Chemistry and Biochemistry To Support Mentored Student Research

We are fortunate to have some of the brightest and best students anywhere. More and more graduates from our classrooms are leaving and contributing instantly and significantly in many professional and academic fields.

The opportunities in our labs and lecture halls are stimulating and challenging. Students are provided with exceptional "real world" learning experiences.

However, they cost money and that's where we would like to invite you to help. Please consider contributing to our student mentoring and scholarship fund. Your donation, when combined with others will give another student an opportunity to participate in a learning experience they might otherwise not have. Down the road your contribution will likely put a student in a position to give a little something back. Just like you!

Brent Hall, LDS Philanthropies Representative
College of Physical & Mathematical Sciences

To contribute email brenth@byu.edu or call 801-422-4501

Student Awards 2008

UNDERGRADUATE AWARDS 2007-2008

Dan Nielson: Keith P. Anderson-Outstanding Senior

Debbie Mitchell: Analytical Chemistry

Dan Roberts: Biochemistry

Laura Nielsen: Chemistry Literature

Amy Felsted: Freshman Chemistry Major

Lauren Zagieboylo: Freshman Chemistry Non-major

Nicole Taylor: Inorganic Chemistry

Steven Scoville: Organic Chemistry Major

Christopher Cutler: Organic Chemistry Non-Major

Josh Chamberlin: Physical Chemistry

Laura Westover: Catalyst Club-Outstanding Junior Woman

Katie Hazen and Kirk Fisher: Chemistry Service Awards

Brent Allred: James A. and Virginia S. Ott Undergraduate Research Award

GARTH L. LEE FALL AND WINTER UNDERGRADUATE TEACHING AWARDS

Spring 2007

Student
Kristie Aamondt
Joshua Chamberlain
Taylor Cline
Mary Feller
Matthew Graff
Kaid Harper
Soren Michaelsen
Deborah Mitchell
Spencer Morgan
Thalia Perryman
Andy Phillips
Isaac Thimmesch
Daniel Walker

Summer 2007

Geoffrey Bean
Justin Farmer
Thomas Godfrey
Ryan Isakson
Ashley Jackson
Michelle Merrill
Shawn Mikkelson
Spencer Morgan
Jamie Olsen
Isaac Thimmesch
Matthew Wright

Fall 2007

Geoff Bean
Jason Scott Bluth
Taylor Cline
Thomas Ence
Courtney Fjelsted
Andrea Griffiths
Derick Jones
Kortney Judd
Jarrett Killpack
Aaron Miller
Spencer Morgan
Jamie Olsen
Simon Pence
Clayton Pratt
John Rawlings
Brad Roberts
Mark Rowe
Trent Savage
Steven Scoville
Jordan Smith
Kristin Watson
Stephen Wilkinson

Winter 2008

Kelsey Bennett
Steve Dahl
Justin Farmer
Courtney Fjelsted
Andrea Griffiths
Katie Hazen
Nate Killpack
Jarrett Killpack
Matt LeCheminant
Michelle Merrill
Aaron Miller
Spencer Morgan
Peter Nelson
Andrew Orton
Brad Roberts
Matthew Curtis Seare
Christopher Smith
Jordan Smith
Isaac Thimmesch
Kristin Watson
Laura Webb
Matt Wright

GRADUATE AWARDS

FELLOWSHIPS

Fang Li: Bradshaw Graduate Fellowship in Organic Chemistry
Outstanding continuing graduate student in organic chemistry - 10-hour research assistantship for up to 12 months beginning Fall 2008.

Michael Christiansen: Charles E. & Margaret P. Maw Research Fellowship
Outstanding continuing graduate student in any area - 20-hour research assistantship for up to 12 months beginning Fall 2008.

Roland K. Robins Research Fellowship
Outstanding continuing graduate students in any area - 20-hour research assistantship for up to 12 months beginning Fall 2008.

Yanshu Feng
John Hunter
Gaurav Saini
Eduardo Sanz-Garcia
Peter Shen
Miao Wang
Michael Wood
Xueyuan Zhou

BYU Graduate Studies Research Fellowships (Internships)
Outstanding continuing graduate students in any area -10-hour research assistantship for up to 12 months beginning Fall 2008.

Jesse Contreras
Chun Wan "Jeffrey" Lai
Bing Ma
Changna Wang
Weichun Yang

Stanley & Leona Goates Research Fellowship
Outstanding continuing graduate student in any area - 20 hour research

assistantship for Spring and Summer beginning Spring 2008.
Robert Hilton

SUPPLEMENTARY AWARDS

Garth L. Lee Award
Outstanding continuing graduate student in any area, based on religious commitment, service, and scholarship- $2,000
Jacolin Murray

Loren C. & Maurine F. Bryner Award
Outstanding continuing graduate student in any area - $1,000
Jesse Contreras
Yanshu Feng
John Hunter
Gaurav Saini
Peter Shen

Jennie R. Swensen Award
Outstanding continuing biochemistry graduate student - $1,000
Chun Wan "Jeffrey" Lai
Jie Ma
Eduardo Sanz-Garcia
Changna Wang

Telford Woolley Award
Outstanding continuing graduate student working in health or cancer related research
Michael Christiansen
Xiantian Long
Weichun Yang

GRADUATING AWARDS

Outstanding graduating Ph.D.
Xuefei Sun

Snapshots from National Chemistry Week

Roger Harrison demos for 200 visiting Asian High School Students

Betsy Olsen discusses her poster during the NCW Poster Session

Mike Christiansen explains his work during the NCW poster session

Ma Bing listens to Kilyoung Kim explain his research

2008 Regional ACS Meeting Summary

The organizing committee for the 2008 Joint Northwest and Rocky Mountain Regional Meeting was: Steven A. Fleming (chair), Matt A. Peterson (co-program chair), Adam T. Woolley (co-program chair), Jeff E. Silk (exposition assistant), Steven R. Goates (awards committee), Eric T. Sevy (undergraduate programming), and Jennifer B. Nielson (treasurer).

The meeting was held at the Park City Marriott, June 15-18, 2008. We planned for 500 attendees and there were 560 that actually registered for the meeting.

The program chairs put together a great technical schedule. We had twelve symposia dealing with: nanoscale materials, material/surface chemistry, synthetic methodology, supramolecular chemistry, mass spect & ion chemistry, bioorganic chemistry, atmospheric & combustion science, medicinal chemistry, surface science, biofuels & bioproducts, inhomogenous electrolytes, and chemical education.

There were general sessions in: analytical, chemical education, inorganic, organic, and physical chemistry. We had 5 poster sessions that included an outstanding undergraduate group at the meeting opening mixer. Eric Sevy, the undergraduate program organizer, put together a terrific program for the nearly 100 undergraduates who attended.

CLOCKWISE FROM TOP LEFT: *Laura and Dan Nielsen presenting their poster; Steven Wood and Steven Fleming reviewing a poster; Christopher Lee presenting his poster; Jared Manwaring and Julie Boerio-Goates; Jennifer Nielsen and Eric Sevy, judges for the poster sessions; Laura and Dan Nielsen were recognized for their first place poster in the undergraduate session*

2008 BYU Homecoming Events

Please mark your calendars and plan to renew your friendships in the department at our homecoming activities as follows:

DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY ACTIVITIES ON OCTOBER 10

6:00 p.m.	Reception
6:30 p.m.	Dinner
7:30 p.m.	Speaker – Clark Turner, BYU Alumnus "The Application of X-Rays: From Mars to Medicine" (Room W-170 Ezra Taft Benson Science Building)

UNIVERSITY ACTIVITIES

Homecoming Spectacular, October 9 & 10 (Marriott Center)
Homecoming Parade and Breakfast along parade route, October 11 (downtown Provo)
Tailgate Party – October 11 at 2:00 pm West Stadium Parking Lot
Homecoming Game – October 11 at 4:00 pm, LaVell Edwards Stadium, BYU vs. New Mexico
Homecoming Dance – October 11 at 7:30 pm in various locations

Below is a reservation form for the Department Homecoming activities. Please mail your reservation to:
Homecoming, Department of Chemistry and Biochemistry,
C-104 BNSN, Brigham Young University,
Provo, UT 84602

or email to marcia@chem.byu.edu.

Reservations should be made no later than October 3, 2008.

I plan to attend:

RECEPTION & DINNER, FRIDAY, OCTOBER 10, 6:00 PM ☐ Yes ☐ No
Number of Guests _____
Number who are BYU Alumni _____

FEATURED SPEAKER CLARK TURNER, FRIDAY, OCTOBER 10, 7:30 PM ☐ Yes ☐ No
Number of Guests _____
Number who are BYU Alumni _____

(Please include yourself in both totals.)

Name: _____ Contact telephone: _____

Address: _____

City, State, Zip: _____ E-mail: _____

DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY
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