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Chemistry & Biochemistry Newsletter

Chemistry & Biochemistry

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Spring 2006

# Chemistry & Biochemistry Newsletter

Department of Chemistry & Biochemistry, South Dakota State University

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*South Dakota State University*

# Chemistry & Biochemistry

*Spring 2006*

## Inside

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*Page 2-4*

- **Campus Mass Spectrometry Facility**

*Page 4*

- **Alumni News**

*Page 5*

- **Alum Featured**
- **Scholarships and Awards**

*Page 6*

- **Two New Departmental Scholarships**
- **Recent Faculty Publications**
- **Funding**

*Page 7*

- **2006 Chemistry and Biochemistry Graduates**

## Message from the Department Head



This academic year has flown by!

The department graduated eight chemistry and nine CLS undergraduate majors this past year. Three of the chemistry majors have gone on to graduate school, four have been offered jobs in the private sector and one is taking a year off to relax. All of the CLS majors have positions in the clinical or biotechnology fields. During this year three Ph.D. candidates were awarded their degrees as well. As a group and as individuals, they accomplished much and should be proud of their achievement. We wish them the best as they take the next step on their journey.

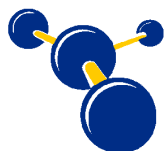
A lot has happened this past year. The \$30 million Shepard Hall addition project is hitting full stride. We are in the planning stages and it will be a busy summer as we come up with the facility plan to meet our needs. The architects and engineers must have the preliminary design work done by January 1, 2007. And depending on the bond market, we could begin actual construction as early as Fall 2007 if we can raise the remaining \$6 million that the Board of Regents has challenged us to do. This is a wonderful opportunity for you to give back to the department. It does not have to be the entire \$6 million (though we would certainly accept it if anyone has it to give!), but there are numerous opportunities to endow a research lab, an instructional lab, or a seminar room (as an examples). Any and all contributions will be welcome, including time that you would be willing to commit help us identify and contact potential donors. If you are interested in learning more, please let me know.

Our NSF-funded Research Experiences for Undergraduates (REU) site program is getting ready to operate again this summer. It not only provides 6-7 undergraduate students annually with an opportunity to participate in world-class research with our faculty, but it is turning out to be an excellent graduate student recruiting tool for the department as well; our third alumnus of the program from outside SDSU will enroll as a graduate student in our Ph.D. program this coming fall. We hope to have a total of ~20 undergraduates doing research in the department this summer; students not supported by the REU finding will supported by other faculty research grants.

Our proposal to offer an American Chemical Society-accredited major in biochemistry has also received approval from the Board of Regent. We have some work to do this summer to get a new course that will be offered to support the major, Biophysical Chemistry, on-line, but we will begin offering the major this coming fall. Based on the preliminary publicity we have done have already had quite a few inquiries from incoming students. You will hear more about this in the Fall 2006 newsletter.

If you are in the Brookings area this summer, we would welcome a visit. We would be delighted to have the chance to bring you up to date on everything that is going on. If you would like to send us an e-mail update on what you have been doing recently, we would be happy to put it in the next newsletter.

Enjoy the summer! And stay in touch!



**chemistry  
& biochemistry**

Jim Rice  
james.rice@sdstate.edu

# Campus Mass Spectrometry Facility

Ever want to break apart a molecule and see what it's made of? Look no further, the procedure to accomplish this delicate task resides at SDSU.

Molecules are “nano” in scale, but the instruments used to study them are huge, both physically and monetarily.

These high-tech machines are housed in the new core campus mass spectrometry facility in the basement of the Department of Chemistry and Biochemistry in Shepard Hall.

Through a \$385,000 EPSCoR grant from the National Science Foundation, \$250,000 in departmental funds, nearly \$215,000 in financial support from other departments on campus, and approximately \$150,000 in renovation funding from the SDSU administration, the Department of Chemistry and Biochemistry obtained two mass spectrometers to augment an existing mass spectrometer the department has had for several years.

The MALDI-TOF [Matrix Assisted Laser Desorption/Ionization Time-Of-Flight] mass spectrometer, the smaller of the two new instruments, became operational February 2005. It consists of a nitrogen laser, a time-of-flight mass spectrometer, and the necessary computer control and data acquisition peripherals.

The second instrument, a Fourier-Transform Ion-Cyclotron Resonance Mass Spectrometer [FTICRMS], came on-line May 2005. It features a 7 Tesla super-conducting magnet surrounded by more than 300 liters of liquid helium and liquid nitrogen. Samples are introduced into the instrument through an electrospray ionization [ESI] interface.

Purchased from Bruker Daltonics in Germany, the instruments arrived in fifteen different crates and took nearly four months to assemble.

## Research capability greatly elevated

The instruments are as striking in appearance as they are in operation, a fact that Professor and Department Head Jim Rice is reminded of every time he walks into the mass spectrometry facility.

“We now have the capability and capacity expected of a department doing fundamental research in a variety of chemistry- and biochemistry-related areas such as protein struc-

ture and function, which is sometimes referred to as proteomics, organic synthesis, bioorganic chemistry, environmental chemistry, and drug discovery.”

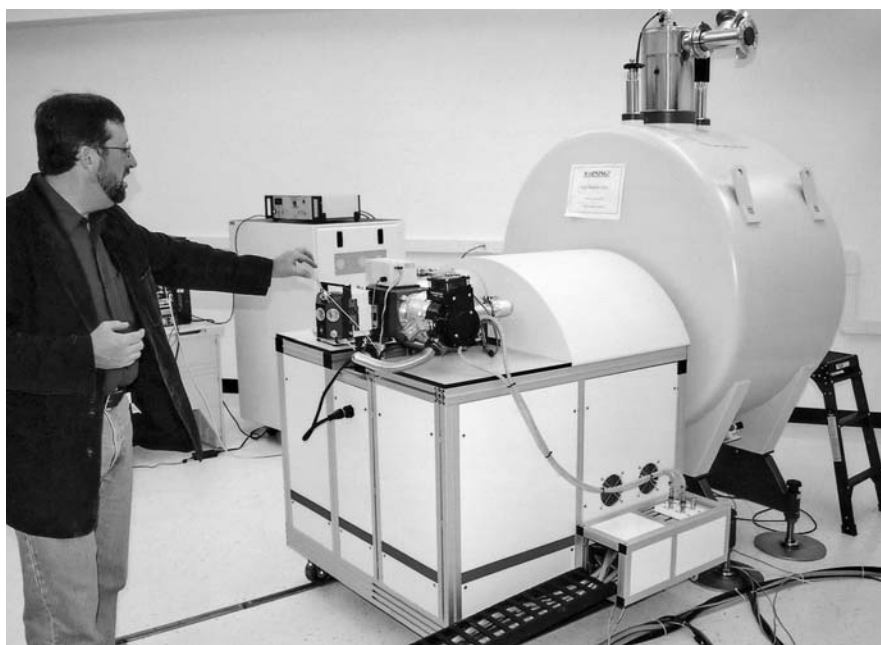
The ESI FTICRMS is a particular powerful instrument, according to Rice, due to its very high sensitivity and ability to characterize very large molecules with very high mass resolution.

“The ESI FTICRMS is a capability not commonly found in academic departments in the United States,” he says. “In fact, the staff at Bruker indicates that it is the only instrument with this capability in the northern Great Plains.”

Though it's run as a campus research service facility, Rice indicates the lab is not a general access facility. “The concern is not so much that people may damage the instruments, but there are life-safety hazards to consider, like high-magnetic fields, high voltage, and lasers.”

## Breaking up molecules

So, what is mass spectrometry? To the casual observer, it's a foreign topic, but for scientists like Rice, it is crucial to understanding the nature of matter.



The Fourier-Transform Ion-Cyclotron Resonance Mass Spectrometer is a powerful instrument, says Jim Rice, due to its high sensitivity and ability to characterize large molecules with a very high resolution. The instrument is not commonly found in academic departments in the United States. And, according to the manufacturer, it is the only instrument with this capability in the northern Great Plains.



In the basement of the Department of Chemistry and Biochemistry in Shepard Hall is the new core campus mass spectrometry facility. The cost to purchase two new mass spectrometers and renovate the department's mass spectrometry facility exceeds \$1 million. Pictured at far left and far right are the new instruments. They augment an existing mass spectrometer the department has had for several years. Mass spectrometry is a technique where information is obtained on the mass of a molecule and its different structural units.

“Mass spectrometry is a technique where you obtain information on the mass of a molecule and the different structural units that it is comprised of,” he says. “From this information you can determine its structure.”

A mass spectrometer adds energy to a molecule. When the molecule absorbs that energy, it causes the bonds between its atoms to break. The result is electrically-charged fragments of the original molecule. The fragments are then sorted by the mass spectrometer and detected to produce a “mass spectrum,” according Rice.

“As long as the energy added is the same each time it is analyzed, a molecule will always break apart in the same fashion,” he says. “By knowing the mass and knowing the mass of the fragments, you basically have a jig-saw puzzle that can be assembled to construct the structure of the molecule. All mass spectrometers do this, but they each do it differently.”

Mass spectrometry uses vary. In environmental applications, the Environmental Protection Agency employs it to determine the presence and concentration of a variety of organic contaminants that get introduced into the environment and their degradation products. Synthetic organic chemists use it to confirm the structures of molecules they create.

Biochemists use it to understand a whole host of questions dealing with human biochemical processes and diseases, biochemical interactions with pharmaceuticals, plant and animal biochemical responses to environmental stress, and the nature of proteins.

“To understand how a particular drug works, you need to know the nature of the receptor site in the body,” says Rice. “To understand the site, you have to know the structure of the molecule. Once that is known, you can understand how the molecule fits into that receptor site. You can also explore how a protein folds, bends, and twists to give you a receptor site.”

For chemists and biochemists it ultimately comes back to understanding molecular structure, explains Rice, who notes that once users have the information they can go to protein databases on the Internet for structural identification and confirmation. “If you don't know anything about the structure of a molecule, you can't understand it or the reactions that it takes part in.”

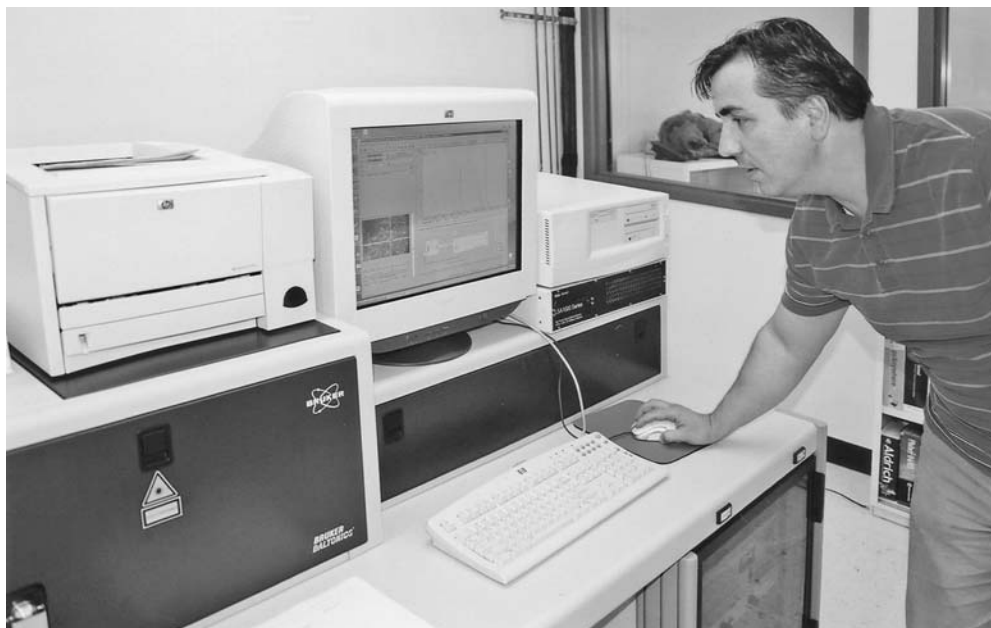
### Campus collaboration

The department was initially going to pursue only the ESI FTICRMS instrument through the NSF EPSCoR grant, but after conferring with other departments, it was clear to Rice that having a second instrument would lead to a unique research capability for the campus.

He says the ultimate goal was to create a campus-wide core instrumentation facility.

“We decided to partner with other departments and the Agricultural Experiment Station, because they don't always have the staff and the space to house instruments like these and maintain them. They agreed to contribute funding toward the cost share of the project. By working together and purchasing both instruments as a package, we were





Research Associate Ovidiu Chilom analyzes information on the Matrix Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometer. The instrument has a nitrogen laser, a time-of-flight mass spectrometer, and computer control and data acquisition peripherals.

able to acquire both new mass spectrometers for essentially the cost of the FTICRMS alone.”

In concert with the NSF EPSCoR grant and \$250,000 from the Department of Chemistry and Biochemistry, other financial players are the Agricultural Experiment Station, College of Agriculture and Biological Sciences, College of Pharmacy, Department of Nutrition and Food Science, and the Departments of Biology and Microbiology, Animal Science, Veterinary Science, and Plant Science. The \$150,000 the University provided resulted in the renovation of the basement in Shepard Hall where the instruments are located.

The total cost to acquire the mass spectrometers and renovate the department’s mass spectrometry facility to accommodate them exceeds \$1 million.

The facility’s operating costs, which includes regular maintenance and salary for a research associate to assist users who submit samples and who actually perform the analyses, is “rather substantial,” says Rice, who expects it will cost about \$75,000 to \$85,000 per year to maintain the facility.

The department agreed to assume the operating costs for one year, according to Rice, to give investigators from other departments enough time to gather the preliminary data they need to write the cost to use the instruments into their grant proposals. When the time period is up, individual users will be charged for use of the facility.

“That’s how we want to run this lab,” he says. “We see a service for fee facility, so not only does it pay for itself, but it gives us an opportunity to start building a research-based community.”

Rice emphasizes the lab needs to keep up with the times and not become static as technology steadily advances.

“We continually want to go after the next generation of instruments,” he says. “Ideally in three or four years we would like to have a user-base that will allow us to justify going after another instrument through grants from federal agencies like the National Science Foundation or the National Institute of Health. Our goal is to put something in place that will grow, evolve, and be dynamic.”

*by Kyle Johnson, written for the College of Arts and Science Newsletter.*

## Alumni News

### Debra (Moosmeier) Piper

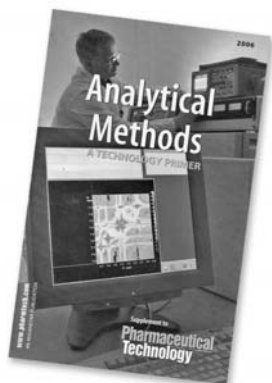
B.S. 1980

I am a 1980 graduate with a B.S. in Medical Technology (Clinical Laboratory Science). I am currently the Laboratory Team Leader at the Avera Heart Hospital of South Dakota in Sioux Falls. I have enjoyed my career in the clinical laboratory.

I have remained in contact with Deb Pravecck through our professional society, the American Society for Clinical Laboratory Science. We are both active in our state organization. She keeps me connected to SDSU. I have a nephew, Brandon Bell, who is now attending State in the Aviation program and ROTC.

*Each newsletter will contain information on alumni and their activities. If you would like to share something about yourself and what you are doing, please send us a note and we will include it in the next issue. You can FAX to us at (605) 688-6364, e-mail us at [James.Rice@sdstate.edu](mailto:James.Rice@sdstate.edu), and mail is always welcome.*

## Alum Featured



By being in the right field—and the right place at the right time—alumnus Tom Offerdahl found more than his fifteen minutes of fame.

Offerdahl, who earned his B.S. degree in 1997 and his Ph.D. in 2001, both in chemistry from State, is pictured on the cover of *Pharmaceutical Technology*, to accompany his inside article on analytical methods. Offerdahl is

senior scientist and group leader, Physical Chemistry and Spectroscopy, Aptuit, Inc., in Kansas City, MO. The trade magazine had asked him to write an article explaining analytical techniques and certain applications to real problems.

“The paper had to be completed in a little over two months,” Offerdahl says. “In the midst of this, my site was bought from my previous company by Aptuit, Inc. Since this was a new company, new advertisements would have to be made. There were several professional photographers on site taking pictures of all the instrumentation and I happened to be the one they had for the NMR spectrometer pictures. This was all well and good, my face on some advertisements, no big thing. But then I asked to have one of the pictures sent to *Pharmaceutical Technology* to be included along with my article. They liked the picture so much, they wanted to use it on the cover. Needless to say, everybody at the company is excited about it.”

At Aptuit, Offerdahl is responsible for physical and chemical characterization of drugs and drug formulations by multiple analytical methods.

“My technique of choice is solid-state NMR spectroscopy, but I use many others,” he says. “It is a growing field in the area of pharmaceutical analysis and more and more clients are requesting this type of analysis to be performed, especially in the areas of polymorphism determination, quantitation of polymorphs and quantitation of amorphous content.”

Due to the emerging nature of this technique, Offerdahl has been invited to give several talks and workshops at conferences around the United States. Most recently, he gave a workshop last September at the Polymorphism and Crystallization conference in Philadelphia.

He’s also been asked to contribute articles for various trade magazines—ergo, his fifteen-plus minutes of fame.

## Scholarships and Awards

*As of May 2006*

### Departmental Awards

*CRC Press Chemistry Achievement Award:* Julie Garry

*Phi Lambda Upsilon Award for Achievement in Organic Chemistry:* Carrie Ostraat

*Analytical Chemistry Award:* Jeff Fahey

*Merck Index Award:* Courtney Wettlaufer and Whitney Wettlaufer

*Hypercube Scholar:* Matthew Small

*American Chemical Society–Certified Graduates:* Courtney Wettlaufer and Whitney Wettlaufer

*Sioux Valley Outstanding Senior Award:* Matthew Small, Courtney Wettlaufer and Whitney Wettlaufer

### Graduate Student Awards

*Philip and Eleanore Haskett Award:* Julie Driver  
(awarded in Fall 2005)

### Departmental Scholarships

*Eugene Burr and Ella Burr Schultz Scholarships:* Kathryn Engle and Amy Rieck

*Elmer and Roberta Johnson Leaders for Tomorrow:* Amy Rieck (*incoming majors*), Julie Garry, Sherif Halaweish and Josh Kofford (*continuing majors*)

*Olive Burke Crary and Gerald D. Crary Jr. Scholarship:* Jeff Fahey

*Hardin Palmer Scholarship:* Steve Hadly (*incoming freshman*)

*Herbert H. Hodgeson Award:* Lindsay Meier

*Webster-Klug Award:* Amanda Heeren, Kim Westendorf and Lucas Zimney

*Arthur W. Dobberstein Achievement Award:* Malissa Eng and Amy Rieck (*incoming freshman*)

*Guss Memorial Award:* Cory Smith

*Oscar and Elaine Olson Scholarship:* Megan Albertson and Andrew Schieber

*E. R. Binnewies Memorial Award:* Carrie Burns

*Drs. Raymond and Magnhild Greb Scholarship:* Ellen Halsen

*Alan A. Nord Award:* Matthew Small

*Joseph and Coral Bonnemann Scholarship in Medical Technology:* Lori Bauer

# New Departmental Scholarships and Endowments

## Hardin-Palmer Scholarship

The Hardin-Palmer Scholarship will be awarded to an incoming freshman majoring in the Department of Chemistry and Biochemistry who will qualify for the Jackrabbit Guarantee.

Born and raised in the Aberdeen area, Dr. Ivan S. Palmer earned his B.S. in Chemistry in 1955 and his M.S. in 1956 from SDSU and his Ph.D. from Penn State in Ag and Biological Chemistry in 1960. He returned to Brookings as an Assistant Professor of Chemistry in 1962 and was promoted to Professor in 1973. He retired from SDSU in 1998 after 36 years and was named Emeritus Professor of Chemistry and Biochemistry by the South Dakota Regents. Dr. Palmer received an SDSU Distinguished Alumnus Award for Service in 2000.

Dr. Palmer's work in selenium biochemistry research earned tremendous exposure for both himself and SDSU. His research bridged the idea that selenium was primarily a toxicity problem to be avoided, to recognizing it as an essential trace element in nutrition. With his mentor, Dr. Oscar Olson, he worked out improved methodology for the analysis of selenium in a variety of materials.

## Wadsworth Research Endowment



Dr. William and Nancy Wadsworth, of Brookings, gifted their home to the SDSU Foundation in a life estate agreement. When the Wadsworths are no longer using the property, it can be sold, with the proceeds going toward establishing

the William S. Wadsworth Jr. and Nancy Wadsworth Research Endowment in Chemistry at SDSU. Their research endowment will provide awards to faculty with published research. Dr. Wadsworth was a chemistry professor at SDSU for 30 years. Nancy worked as a virologist after graduating from Chatham College in Pittsburgh, PA.

Bill and Nancy Wadsworth made a life estate gift of their Brookings home in 2005. They may live in the home for their lifetimes, or could move elsewhere and rent it out. An immediate income tax deduction was a welcome benefit to the transactions with the SDSU Foundation. Even more satisfying is the eventual use the SDSU Chemistry Department will make of the sale proceeds. Bill, a professor in the department for 30 years, has made a provision for the Wadsworth Faculty Research Fund, which will reward the published research work of faculty members.

## Hach Scientific Foundation Scholarship

Starting in 2007-08, the Hach Scientific Foundation will provide two undergraduate scholarships to SDSU for future high school chemistry teachers. The scholarships are specifically for students majoring in chemistry who are also working towards teachers' certification. The scholarships are available for up to six years of school so a senior who decides to become a teacher would be able to complete education coursework after graduation.

The scholarships are for \$6,000 a year per student and are renewable each year. The scholarship can be used toward tuitions, room and board, books and lab fees. Students must maintain a grade point average of at least 3.0 and must reapply for the scholarship each year with a one page written commitment and a one page application.

The chemistry faculty will choose a committee select the two scholars. The criteria for selection are high financial need, high interest in both chemistry and teaching, and academic aptitude.

## Tanaka Scholarship



Former chemistry professor John Tanaka influenced many students during his tenure (1956-63). Now, he's back with a gift that will impact many more.

Tanaka and his wife, Patty '59, have made a significant gift to support chemistry student research. "That's where the excitement is in science, to get in the labs and discover things," Tanaka says.

The program is patterned after a similar award at the University of Connecticut, where Tanaka recently retired after 40 years. "It's been very popular here. It gets students interested in undergraduate research and it helps faculty members out," Tanaka says.

Contact with former students spurred Tanaka to give back to State. He says he appreciates that "Students remember me and they've said nice things."

One such student is Distinguished Alumnus R. Craig Schnell, vice president and provost at North Dakota State. "He cared a lot about students. He kept them interested in working," Schnell says. Tanaka was a "student magnet" who recruited "without a heavy sales pitch, but just by example. If you needed help, he was there to help you."

And he still is.

## 2006 Chemistry and Biochemistry Graduates

### *Bachelor of Science – Chemistry*

**Brian Carter** (B.S. Chem in May '06), Major in Chemistry (*Work in industry*)

**Heidi Hoffman** (B.S. Chem in May '06), Major in Chemistry (*Moving to Nevis West Indies and relax for a year*)

**Joey Rusch** (B.S. Chem in May '06), Major in Chemistry; Minor in Biology (*Moving to Ohio to work in the polymer industry*)

**Ashlee Deinert** (B.S. Chem in May '06), Major in Chemistry (*Work in Sioux Falls, probably at Wells Fargo*)

**Courtney Wettlaufer** (B.S. Chem in May '06), Major in Chemistry (ACS Certified), Minor in Biology (*Graduate school at University of Iowa or University of California in San Francisco in Biochemistry*)

**Whitney Wettlaufer** (B.S. Chem in May '06) – Major in Chemistry (ACS Certified), Minor in Biology (*Graduate school, either at University of Iowa or at University of South Dakota in biochemistry or biomedical engineering*)

**Kang Vo** (B.S. Chem in May '06), Major in Chemistry (*Graduate school at South Dakota School of Mines and Technology*)

**Wendy Maserek** (B.S. Chem in May '06), Major in Chemistry (*Work for Dr. Brian Logue for the summer, then get a job in Omaha, NE*)

### *Bachelor of Science – CLS*

**Robert Butler** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Biology (*Working at Avera McKennan in Sioux Falls, SD*)

**Brandon DeBoom** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Biology

**Jamie Fleiter** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Biology

**Cassandra Herschman** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Biology (*Working at St. Lukes Hospital in Cedar Rapids, IA*)

**Carmen Jaeger** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Nutrition (*Working at Sioux Valley Hospital, Sioux Falls*)

**Ann Krumpus** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry

**Matthew Lockey** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Biology

**Amanda Seifert** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Biology

**Brandi Zerfoss** (B.S. Chem in May '06), Major in Clinical Laboratory Sciences, Minor in Chemistry and Biology

### *Doctor of Philosophy*

**Judit Bartalis**,  
Hepatoprotective Activity of Cucurbitacin  
(Dr. Fathi Halaweish)

**Eric Huntimer**,  
Effect of Echinacea angustifolia Root Extracts and Caffeic Acid Derivatives on Cancer Cell Proliferation  
(Dr. Fathi Halaweish)

**Gang Xie**,  
Citric acid production by *Aspergillus niger* strains grown on corn substrates from ethanol fermentation  
(Dr. Tom West)

### *Master of Science*

**Feng Xiang**,  
Processing and Characterization from Distiller's Dried Grains. (Dr. Fathi Halaweish)

### *CLS Internships*

**Brandi Bolte**, Mercy Medical Center, Sioux City, IA

**Stacy Husman**, McKennan Hospital (through UND)

**Julie Walter**, St. Lukes Hospital, Cedar Rapids, IA

**Kim Bennett**, Sioux Valley Hospital, Sioux Falls

**Lisa Story**, Rapid City Lab

**Kyle Stauter**, Berkshire Medical Center (Pittsfield, MA)

**Heather Dammann**, McKennan Hospital, Sioux Falls

**Raquel Rinderneck**, McKennan Hospital, Sioux Falls



## Recent Faculty Publications

### Fathi Halaweish

Vukovich, M., Halaweish, F.T., Ballard, T., Stevermer, S., Agrawal, P., Naringin does not alter caffeine pharmacokinetics, energy expenditure, or cardiovascular hemodynamics in humans following caffeine consumption. *Clinical and Experimental Pharmacology and Physiology*. 33, 310-314, 2006.

Scott L. Kronberg, Mindy B. Hubert, Fathi T. Halaweish, and Paul J. Weimer., Interactions Between Cattle and Goat Rumen Microbes and E. esula Toxins. *J. Chem. Ecol.* 32 (1), 15-28, 2006.

### Brian Logue

Baskin S.I., Petrikovics I., Wild J.R., Wales M., Rockwood G.A., and Logue B.A. (2006) Viability of spectrophotometric analysis of 2-aminothiazoline 4-carboxylic acid as a method for estimating cyanide in biomedical samples. *Toxicology Letters* (accepted).

### Jim Rice

Chilom, G.: Rice, J.A., 2005, Glass transition and crystallite melting in natural organic matter, *Organic Geochemistry*, 36: 1339-1346.

Berka, M.; Rice, J. A., 2006, Characterization of soil particle surfaces using adsorption excess isotherms, *Langmuir*, 22: 687-692.

## Funding


### Cole-Dai

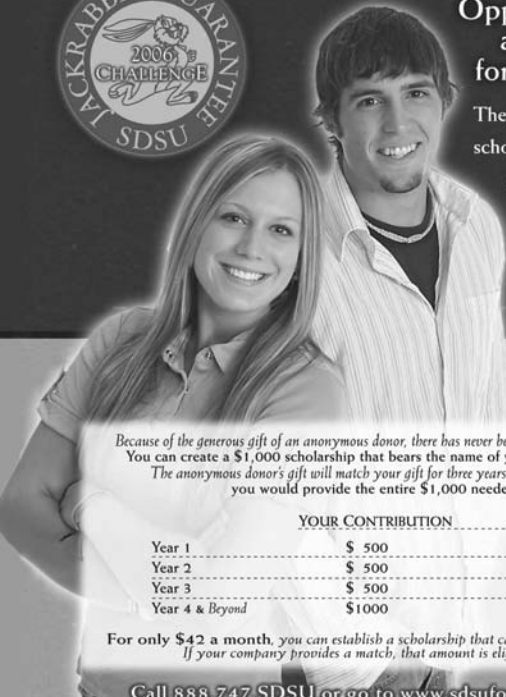
Major Ion Chemistry of the West Antarctica Ice Sheet Divide Ice Cores (PI: Jihong Cole-Dai), \$330,000 by NSF. 2006-2009

### Logue

"Analysis of the cyanide metabolite 2-amino-thiazoline-4-carboxylic acid (ATCA) in fish tissue and biological matrices," US Army Medical Research Institute of Chemical Defense, PI, \$63,581 (2006-2007).

"Proposal for continued funding on CAAN project: Molecular beacon based electrochemical nanosensor for analysis of target DNA," Center for Accelerated Application at the Nanoscale, PI, \$29,615 (2006-2007).





### Here's Your Opportunity to Establish a New Jackrabbit Guarantee for Only \$500 a Year!

The Jackrabbit Guarantee promises an annual scholarship of at least \$1,000 for four years to students with an ACT score of 24 or higher, who maintain a GPA of 2.5 or more while completing 30 credit hours per year.


### Here's How it Works

Because of the generous gift of an anonymous donor, there has never been a better time to establish a Jackrabbit Guarantee. You can create a \$1,000 scholarship that bears the name of your family or business – for only \$500 a year. The anonymous donor's gift will match your gift for three years. Beginning in the fourth year and beyond, you would provide the entire \$1,000 needed to sustain your scholarship.

YOUR CONTRIBUTION	ANONYMOUS DONOR PROVIDES
Year 1 \$ 500	\$ 500 Match
Year 2 \$ 500	\$ 500 Match
Year 3 \$ 500	\$ 500 Match
Year 4 & Beyond \$1000	\$ 0

For only \$42 a month, you can establish a scholarship that carries your name and helps a current SDSU student. If your company provides a match, that amount is eligible for the anonymous donor's match.

Call 888.747.SDSU or go to [www.sdsufoundation.org](http://www.sdsufoundation.org) today for details.



## Jackrabbits Helping Jackrabbits

I want to ACCEPT the Jackrabbit Guarantee 2006 Challenge and will pledge \$.....per year toward this exciting scholarship program.  
(Please make checks payable to SDSU Foundation)

Please send me more information on the Jackrabbit Guarantee 2006 Challenge.

Name.....  Friend  Graduate: Year..... Major.....  
 Address..... City..... State..... Zip.....  
 Preferred Phone #..... Email.....  
 Job Title..... Employer.....  
 I am enclosing a check for \$..... To contribute online, go to: [www.sdsufoundation.org](http://www.sdsufoundation.org)  
 Credit Card: Visa/Mastercard/American Express/Discover (circle one)  
 Credit Card #..... Expiration Date..... Signature.....