



UNIVERSITY OF WYOMING

DEPARTMENT OF CHEMISTRY



Spring 2013

CHEMISTRY NEWS



Inside this issue:

| | |
|---------------------------------|-------|
| New Faculty | 2 |
| Alumni News | 2 |
| Faculty News | 3-8 |
| Retirements | 8 |
| Remembrance | 9-11 |
| Faculty, Staff & Student Awards | 12-13 |
| Honorary Mention | 14 |
| Giving to Chemistry | 15 |

FROM THE DEPARTMENT HEAD

This is my first newsletter as Department Head. Professor Ed Clennan completed a total of 10 years as Department Head, leaving me a big set of shoes to walk in. Ed oversaw a period of great change in the Department of Chemistry. Ed dealt with the loss of 8 professors through retirements, resignations, and the untimely death of our friend and colleague Professor Patrick Sullivan. The department, under Ed, managed to grow back and not despair the loss of so many colleagues. I too was on the list of who left the department, but Ed talked me back into the

department and somehow talked me into taking over as Department Head.

The new Enzi building's construction has begun in earnest. This building is a 50 million dollar 60,000 square foot facility that will house lower division undergraduate laboratories in several disciplines. The Enzi building will include all of our general chemistry labs, organic chemistry labs, and quantitative analysis labs. It will be equipped with all new equipment, even a 200 MHz NMR dedicated to the organic labs. This new building will be located on the north side of Lewis Street at the corner of 10th and Lewis.

I am also very happy to report that Jing Zhou's promotion to Associate Professor was very favorably received by the department and I anticipate that her promotion and tenure will be approved by the Board of Trustees prior to the next academic year. Jing is a Surface Chemist with a PhD from the University of South Carolina and a postdoctoral position at Oak Ridge National Laboratory. Jing studies catalytic materials at the most fundamental atomic level and then works up to real (applied) catalytic systems. This research has considerable value to current and future improvements in energy resources. Last year Jing won a \$506,000 NSF Career Grant to continue her research and to develop new teaching methods.

Bridget Decker joined the department for the Fall 2012 semester as a part-time Academic Professional Lecturer. I am glad to report that she's chosen to teach with us for another year and we have brought her up to full-time. Her up-beat personality has been a welcome addition to our department.

The Department continues to bring in outstanding scientists from around the world for our speaker series. This past summer we had Professor Richard P. Van Duyne from Northwestern University. Dr. Van Duyne, the discoverer of Surface Enhanced Raman Scattering gave three lectures on Surface-Enhanced Raman Spectroscopy, Biosensing with Plasmonic Nanosensors, and New Directions in SERS: Pushing the Sensitivity, Space, and Time Limits.

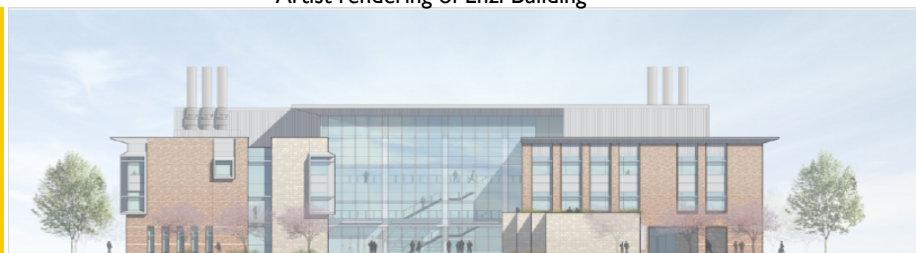
This fall we had an excellent Rhoads/Raulins lecture from Professor Greg Fu the Altair Professor of Chemistry at the California Institute of Technology. Professor Fu spoke about his research on Metal-Catalyzed Cross-Coupling Reactions of Alkyl Electrophiles.



Dr. Carron visits with Professor Van Duyne during the summer lecture series

Artist rendering of Enzi Building

Continued on Pg 2



FROM THE DEPARTMENT HEAD Continued from Page 1

One of my more enjoyable jobs is writing letters when we receive gifts. This year we saw large cuts in our departmental budget and more coming next year. The price of natural gas and coal is affecting Wyoming's economy and is creating budget problems at UW. Your gifts are very generous and help us through these tough times.

You can keep abreast of chemistry department events by visiting our website at <http://uwadmnweb.uwyo.edu/Chemistry/>. You might even recognize an old friend on our new alumni page! Please send us your stories so that we can post them. Please continue to stay in touch and make us aware of your accomplishments. We enjoy hearing from you!

Best Regards,
Keith

**A Chemistry Welcome to our Newest Faculty Member!**

Dr. Bridget Decker joined the Chemistry Department at the University of Wyoming in 2012, as a part time Academic Professional Lecturer.

Bridget earned her B.S. from Colorado State University in 1998. Following graduation, she spent one year as a Research Assistant in the lab of Tom Maciag at the Maine Medical Center Research Institute. She then began her Ph.D. studies at Dartmouth Medical School. As a graduate student in the lab of Bill Wickner (National Academy of Science member), she identified two novel proteins required for membrane fusion. After completing her Ph.D. in Biochemistry in 2006, Bridget joined The Weinberg Group as a Scientific Consultant to pharmaceutical companies and legal teams. While consulting, she realized her love for teaching and began teaching at Marymount University, Montgomery College and Northern Virginia Community College (NVCC). From 2010 to 2012 Bridget was an Assistant Professor at NVCC. We're very glad to have her with us!

Alumni News: Where Are They Now?

Jeff Butikofer (Ph.D. 2005) was tenured and promoted to Associate Professor at Upper Iowa University in 2011, and since that time has served as Department Chair of the Physical Sciences department. Jeff also has served as the Pep Band Director for the past three years.

Brian Gruver (Ph.D. 2012) has been the Lab Manager at Koch Nitrogen in Fort Dodge, Iowa. Brian also teaches the Chemistry II night Lab this Spring at Iowa Central Community College.

Shannon White (Ph.D. 2000) is working at Aspen Aerogels, primarily on thermal management for space applications (satellites and cryogenic storage tanks), and was promoted to Senior Program Manager this past year. Shannon, husband Kevin, and girl Maya (almost four) planned to vacation this March in the Bahamas.

Jami Zwiefelhofer (M.S. 2005) is still working in pathology at the Mayo Clinic, and was able to present some of her work at a histopathology conference in Vancouver, Canada this past fall.

Brittany Hodges (B.S. 1999) recently left her position at UC Denver in preparation for her first child, due in early March. Brittany plans to stay home for a while with the baby. Congratulations, Brittany!

Richard Merwin (Ph.D. 1994) started a new position on April 30, 2012 at Stepan Company, in their Agricultural Functional Chemicals Division. This was accompanied by a move from sunny Arizona to a somewhat cooler/less dry Chicago area.

Johannes Corley (Ph.D. 1993) has been at Rutgers in the IR-4 Program since 1998 as an Associate Coordinator of Residue & Analytical Chemistry. Johannes married in 2002, and his son just turned 6 and will be entering 1st grade in the fall.

Nick Baumgartner (Ph.D. 1969) retired in August, 2012, after 42 years at John Carroll University. Nick filled many positions while at John Carroll, including Professor, Chemistry Department chair, and the Dean of the College of Arts & Sciences. He will continue to teach an introductory course in the department.



Navamoney Arulsamy

Research scientist **Navamoney Arulsamy** manages the Departmental X-ray, EPR and ESI-MS laboratories. He also taught the Advanced Inorganic Chemistry Lab course (CHEM 4100) in the Fall 2012 semester. This class meets twice a week for three-hour periods. The laboratory course is updated

every year with new experiments for the changing needs of skills in the chemistry job market. In the Fall 2012 semester, experiments that involve the preparation of organometallic catalysts suitable for formylation reactions, the harvesting of

the solar energy and also the preparation of nanomaterial catalysts were included. Through this course, Arulsamy tries to enkindle imagination and creativity in students. As a research scientist in charge of the various instruments, Arulsamy worked with students and other researchers, and trained a number of them in powder and single crystal X-ray diffraction methods. Arulsamy also accomplished a significant amount of research working in his lab. His research has unearthed a new description for nitric oxide reactivity in both chemical and physiological milieus. Arul and one of his undergrad researchers and he have published a paper in the *Journal of Organic Chemistry: J. Org. Chem.* **2012**, 77(17), 7313–7318. Arulsamy continues to enjoy both the teaching and research components of his job.

The fall semester kept **Carla** busy as usual in 2012. The majority of the teaching assistants were new, and that always keeps her on her toes! Carla taught the Introductory Chemistry course (CHEM 1000), as well as writing and revising a new manual for the course. In addition, Carla is the laboratory coordinator for all of the undergraduate (CHEM 1020 & 1030) laboratories, which kept her hopping with troubleshooting and making sure all experiments ran as smoothly as possible.

In the spring semester Carla is teaching General Chemistry I, as well as coordinating all of the undergraduate laboratories, and running the stockroom for the labs.

On top of all of her normal duties, Carla is also a member of the planning committee for the new Enzi STEM teaching

Carla Beckett

building. This building will house the laboratories for the 1000 and 2000 level chemistry courses, along with other science labs. The ground is cleared for the construction, and Carla is anxiously awaiting the day when she can start moving the teaching

laboratories into their new homes.



Ed Clennan

Ed Clennan's research group currently consists of three graduate students, **Xiaoping Zhang**, **Mohammad Assiri**, and **Thomas Backupog**. The group is funded by a National Science Foundation (NSF)

Grant to study the development of new dicationic materials for potential uses as sensitizers and as components of electrochromic devices. The start date for this new NSF grant was in August so we are yet in the early stages of the synthetic component of the project but initial photophysical and electrochemical characterizations of some first generation new materials

have started. Last year we published two manuscripts, one in the "CRC Handbook of Photochemistry and Photobiology" and the second in "The Chemistry of Peroxides."

Ed was busy this past year as the Editor of the *Journal of Sulfur Chemistry* and as a member of the Editorial Board of the *Journal of Physical Organic Chemistry*. In addition, Ed recently accepted a position on the Advisory Board of the Petroleum Research Foundation. Last summer, Ed was finishing up his term as Department Head and consequently only attended two meetings, one in Jan Dlugosz University in Czestochowa, Poland and a second in London, UK.





Keith Carron

The **Carron** group focused on exploiting our Lab-on-a-Bubble technology this year and we developed a novel site-selective method to study SERS phenomena. We coupled the Lab-on-a-Bubble with

immunology and developed an assay for Cholera toxin. This work was published in a paper entitled, *Lab-on-a-bubble surface enhanced Raman indirect immunoassay for cholera*, with **Virginia Schmit** (Ph.D. 2011) and **Rich Martogolio** (Ph.D. 2002). Rich and Ginny started this project last summer when Rich spent a very productive couple of months working with us while on sabbatical from Depauw University. We also presented this work at the ACS Meeting in San Diego.

We have continued our collaboration with **Aaron Strickland** (Ph.D. 2004) and his company iFyber. We won a million dollar Army grant this year with iFyber and Rick Van Duyne at Northwestern University. We also won an Army grant with **Jason Guicheteau** (Ph.D. 2003) at Edgewood Chemical and Biological Center to study interparticle gaps in SERS with site selective spectroscopy.

Brandon Scott, a second year student in our group, is developing a really interesting spectroscopic method called Dynamic Raman Scattering (DRS). Noise has been a challenge throughout my career; this year I decided to give up and use noise to my advantage. We are studying the unique noise spectrum produced by

nanoparticles. Brandon and I published a nice paper in *Analytical Chemistry* entitled, *Dynamic surface enhanced Raman spectroscopy (DSERS): extracting SERS from normal Raman scattering*, where we laid the groundwork for this technique.

I presented some of this work at SPIE Defense in Edinburgh and Brandon presented it at SciX in Kansas City.



For fun I continued my interest in extreme hiking. This year began with a hike all the way to the summit of Angels Landing in Zion National Park and finished with a 97 mile hike from the west coast of England to the east coast following Hadrian's Wall all the way. Green English countryside is a stark contrast from the desert southwest.



The **Dutta** research group at this point comprises five graduate students, **Tristan Kinde**, **Naoki Yanagisawa**, **Ling Xia**, **Basant Giri** and **Ravi Peesara**. **Tristan** successfully defended his dissertation in March 2013 and will be the first PhD graduate from the Dutta group. He is planning to join the Sinclair Oil Corporation following his graduation, and will be working on his publications that are expected to come out later this year. **Naoki** and **Basant** are lined up next to finish their PhDs. **Naoki** published his first paper in *Analytical Chemistry* last year (his 5th overall) and is happily working towards getting a few more during the rest of his stay in the Dutta group. **Basant** is expecting to get his first couple of publications later this year to set himself up for his PhD defense. **Ling** published two papers one in *Analytical Chemistry* and the other in *Analyst* over the past year getting herself ready for graduation in the summer of 2014.

Debashis Dutta

Ravi, the youngest member of the group (academically), is currently not thinking about his graduation date (I hope), and is all occupied developing novel microfluidic ELISA



approaches to enhancing the detectability of biomolecules. Prof. Dutta gave an invited talk at the 95th Canadian Chemistry Conference last summer in Calgary followed by a second one in Baltimore. In addition, **Naoki** presented some of his research work at an NISBRE conference in D.C. last July. Research work in the Dutta group is currently funded by the National Science Foundation.



Patricia Goodson

Patricia's responsibilities this academic year have been quite diverse. During the Fall 2012 semester, she taught two large sections of CHEM 1020, General Chemistry I, with a total enrollment of over 400 students. This really had her honing her management skills! Because one of the classes was scheduled in an

auditorium quite a distance away from the Classroom Building's chemistry prep room, she was limited in her ability to perform some of her favorite chemical demonstrations for the class. As an alternative, she tried her hand at writing, directing, producing and starring in short videos of selected classroom demonstrations. Not quite as impressive as the "live" version, but it

worked. This Spring 2012 semester, for the first time in over 20 years, Patricia has had the opportunity to teach an upper division course with a small enrollment: CHEM 4040 (Chemical Literature). This course is proving to be quite a challenge since she has not been in the "chemical literature" information loop in some time. She is enjoying learning about electronic access to all of the "old standards" and journals, as well as numerous new databases.

On a personal note, Patricia is looking forward to this year's Spring Break trip with her husband, Dean Roddick. They are headed to Turneffe Island where Dean will scuba dive and she'll relax on the beach.

Research in the **Hoberg** group continues to involve a mixture of organic synthesis and coordination chemistry to produce metal catalysts for the splitting of water using solar energy. **Alyssa Pearson**, a PhD student, has been working on the synthesis of N-Heterocyclic carbene ligands that complex to a range of metals through a "southern" bipyridine moiety but will also complex to other metals at the "northern" carbene moiety. This dual catalyst system absorbs light across a wide range of the UV/Vis spectrum and we are just beginning to look at their properties. Funding has been provided from the School of Energy Resources in the form of a GA and from the SER - CPAC. Recently, Alyssa was awarded an NSF fellowship for her work to travel to New Zealand and collaborate with faculty at Victoria University. Several undergraduates also contributed to the Hoberg group

John Hoberg

research and should be mentioned and thanked. These include **Carrie McCarthy, Kelsey Thrush, Jennifer Morkemo, Jennifer Morkemo** and **Dihua Xue**.



Jan Kubelka

Research in **Jan Kubelka's** group focuses on some of the fundamental problems in modern biophysics: understanding how proteins fold, bind substrates and carry out biological functions. We are also interested in vibrational spectroscopy of biomolecules, in particular in understanding the

complexities of protein infrared spectra in solution. The group currently consists of four graduate students, **Ben Anderson, Ginka Buchner, Jason Lai** and **Will Welch**, and two undergraduates **Elizabeth Cleverdon** and **Borden Ball**. Ginka and Elizabeth focus on protein folding experiments,

while Ben with Borden work on simple model compounds, such as amino acids and short peptides. Jason and Will work on computational projects. In the past twelve months we have published five journal articles and presented four posters at the 56th Annual Meeting of the Biophysical Society (San Diego, CA). We are grateful to the National Science Foundation CAREER grant for supporting our work.



Teresa Lehmann

Associate Professor Vladimir Alvarado (Chemical and Petroleum Engineering) and **Assistant Professor Teresa Lehmann (Chemistry)** were awarded the School of Energy Resources 2012 One-time Major Equipment Purchase competitive grants. The awarded funds have been used to purchase a Bruker AVANCE 300 microimaging instrument with RheoNMR capability, which will be housed in the UW NMR Facility (Physical Sciences Building). This new

instrument will enable the study of fluid-rock interactions and measurement of properties of porous media and interfacial systems with focus on energy resources. This research line will enhance our understanding of unconventional reservoirs production mechanisms. The microimaging system can also be used to collect images of tissue samples. The acquisition of this new 300 MHz system has made the NMR facility at UW the only one with solid- and liquid-state NMR, as well as microimaging and ReoNMR capabilities, in the three-state area.



The **Leonard** Research Group has been quite busy in the last year synthesizing numerous metal carbide nanomaterials and testing them for their catalytic activities. With the addition of several new instruments on campus, our research is really ramping up with multiple exciting projects.

Yagya Regmi has continued to work on the synthesis of bimetallic oxide nanoparticles and their conversion to bimetallic carbides. He now has several systems working and is preparing a manuscript about their synthesis. Yagya has also taken the lead on our catalytic electrochemical testing. This represents a major step for the group and we are now testing several of our materials for fuel cell catalysis. **Cheng Wan** has been working on amine reduction of metal oxides to synthesize metal carbides. He has made several key discoveries with the molybdenum carbide system including morphology and crystal structure control and is preparing a manuscript about his findings.

Samantha Schmuecker is working on bimetallic carbide nanowires synthesized using the salt flux technique. She is exploring phase space of several new materials involving early transition metals. Both Cheng and Sami passed their preliminary exams this past year, Congratulations to both!

Greg Waetzig won the SER-CPAC Undergraduate Research Fellowship that supported his research last year. He traveled to the regional ACS meeting in Westminster to present his findings and won the undergraduate poster award. Greg will be graduating this spring and is currently visiting graduate schools to determine where he wants to

Brian Leonard

attend. Greg also won several awards at last year's Undergraduate Award Luncheon including the Undergraduate Inorganic Chemistry Award, A&S Student Service Award, Arthur Gray Janssen Award, and the Rebecca Raulins Undergraduate Research Award. **Jack Stacy** was also honored with the outstanding Junior Award and **Kyle Duffee** won the Outstanding Freshman Award. Jack was also awarded a NASA undergraduate research fellowship which funded his research on late transition metal carbide nanomaterials. Brian attended the Solid State Gordon Research Conference last summer where he presented the group's work on metal carbide nanowires. Brian has also been busy with the acquisition and installation of several new instruments including the new Transmission Electron Microscope (TEM), Powder X-ray Diffractometer (PXRD), and X-ray Photoelectron Spectrometer.





Bruce Parkinson

The **Parkinson** group, along with the School of Energy Resources is proud to offer the services of a brand-new HRTEM Facility!

The HRTEM Facility houses the FEI Tecnai G2 F20 STEM, an electron microscope capable of high resolution (less than 1 nm) imaging. The TEM

is also equipped with an electron dispersive x-ray (EDX) spectrometer for simultaneous imaging and elemental analysis. It will open up as a user facility to serve the needs of materials research group within the university and possibly affiliate academic institutions in the region. The microscope was funded by the School of Energy Resources but will run independently on user fees later on. Postdoctoral research associate Erwin Sabio has taken charge of the running of the facility in the Parkinson group.

Research in the **Roddick** group continues to focus on approaches to selective hydrocarbon conversion chemistry. With seven graduate students currently in the lab, things are a bit tight- all the high vacuum lines are fully occupied in PS 442. **Thomas Parson** has set up the HF handling line in preparation for returning to his organometallic superacid research project. **Jeramie Adams** accepted a Research Scientist position at the Western Research Institute last Spring and has left quite a vacuum (no pun intended) in our group. Fortunately he works literally ~150 yards away and lets us pick his brain (we also have a few final papers of his that we need to get out this year).

Dean presented a poster entitled "Steric Effects on Pincer Complex Coordination Chemistry and Catalysis" at the Organometallic Gordon Conference July 2012 in Newport, Rhode Island and got to briefly visit **Shannon White** in the Boston area. For Spring Break this year, Dean and Patricia stayed at a nice resort on the Turneffe Atoll in Belize. We

Dean Roddick

are still waiting for Spring to arrive back in Laramie. In April, **Tamara Sibray** attended the National ACS Meeting in New Orleans and presented a talk entitled "*Synthesis and Reactivity of Iridium^{Rf}PCP Chelates with Increasing Sterics*". Dean is giving research seminars out in California at USC and Caltech at the end of April, and is an invited speaker in a pincer ligand symposium at the Canadian Society of Chemistry in Quebec City this May.



Visit us online at <http://www.uwyo.edu/CHEMISTRY>

Here you'll find updated information on what's happening in the Chemistry Department including information about our fall and spring speaker series.



Jing Zhou

Jing Zhou's research group is in its 6th year at the UW Chemistry Department. The group currently consists of **Sakun Duwal, Shanwei Hu, Elfrida Ginting** and **Eric Peterson**. Elfrida is a 3rd-year graduate student. Shanwei is a visiting Ph.D.

student from University of Science and Technology of

China. Sakun and Eric are Chemistry undergraduate students. The group also hosted **Gabe Shih**, a high school student, for research on the growth of Au particles supported on titania-ceria mixed oxides using sol-gel methods. In the past year, the group has been making steady progress in research which focuses on the fundamental understanding of structure-property relationships of manganese oxide thin films as well as Mn-doped ceria thin films for their applications in catalysis. Elfrida was awarded the Dorothy and Hoffman Travel Award to present a poster at the American Vacuum Society 59th International Symposium in Tampa, FL. Our research findings were further reported in three manuscripts.

Retirement News

Contributed by Keith Carron

This year (2013) **Oliver (Ollie) Walter** will step down after 24 years as our Dean. During this year's search for a new Dean the candidates were impressed by the multidimensional nature of UW's College of A&S. We thank Ollie for his leadership during good times and tough times. I asked Ollie how he felt about Chemistry after 24 years and he said, "When I became Dean in 1989, I, frankly, was not aware of the wide variety of discipline cultures and within the discipline, the variance in departmental cultures. I have consistently been impressed with the culture of the UW Chemistry department. It can be characterized by one in which there is a high degree of student-faculty interaction. For instance, no other A&S department can cite the close working relationships that develop between students and faculty that is present in the Chemistry department through the work of students in both research and teaching labs. Second, it is a department with a culture of high standards, standards which apply both to student and faculty performance. When faculty earn tenure

no one can question the rigor of the evaluation employed by departmental peers. Equally, when a Chemistry student is recognized at graduation for academic achievement, I know that student is bound for a successful career. I have attended many Chemistry department lectures over my years as Dean. And I make no claim that understanding research presentations is elementary. But I am ever confident that both the faculty and the students are fully attuned to even the most esoteric subjects."

After 35 years of service to the University, **Carmen Candelaria**, the department accountant, has decided that it's time to embark on life's next adventure. We'll miss her smiling face and quiet presence in the department, but we cannot blame her for wanting to experience retired life. When asked what she planned to do, she was heard to reply "The Bahamas looks good about now...!"



We Look Forward to Hearing From You:

We are trying to update our records!

Let us know what you are up to, where you are employed, and update your contact information.

Please send us an email with your information to: chemistry@uwyo.edu

In Fond Remembrance

This year has seen the loss of many of our revered colleagues. We remember them fondly.

Dr. R. Owen Asplund (May 5, 1928-September 6, 2012) moved to Laramie and took a position as a young faculty member at the University of Wyoming in 1958. He was born in Lethbridge Alberta, Canada. Lethbridge is the 4th largest city in Alberta and the largest city in southern Alberta. It also hosts the University of Lethbridge but Owen decided to begin his academic career at the University of Alberta. After completing his undergraduate work he obtained his Ph.D. in chemistry from West Virginia University. When he arrived in Laramie, he took up residence in the old chemistry building, which is now part of the Health Sciences Complex. His research interests were in agricultural chemistry and upon his arrival he became the second biochemist in the Department of Chemistry. His early research, however, could be classified as natural products chemistry because he was interested in isolation of natural products from western sagebrush. In fact, several of his early papers were published in the journal *Phytochemistry*. In the 1980s he became interested in circular dichroism (CD) and published one of the first studies of the CD of iron (III)-L-amino acid complexes. In the 1990s he collaborated with Professor Derek Hodgson, who was the Chemistry Department Head at the time, in the study of calcium binding to carboxylate residues and in particular *g*-carboxyglutamate (Gla) which is found in calcium proteins and was thought to play a role in the ability of these proteins to discriminate between calcium and magnesium. Over the years Dr. Asplund primarily taught General Chemistry and Organic Chemistry. In 2005 he was awarded the A&S Outstanding Former Faculty Award that reflects in large part the high regard in which he was held by the undergraduates in his courses. In 2005 he also became a 50-year member of the American Chemical Society. In recognition of his vast contributions to undergraduate education the Department of Chemistry also administers the "Owen Asplund Prize for Undergraduates in Chemistry."

Dr. Jerry H. Buss (January 27, 1933-February 18, 2013) was born in Salt Lake City and raised in Kemmerer, Wyoming. He attended the University of Wyoming and graduated in 2.5 years with a B.S. in Chemistry. He then attended graduate school in Los Angeles at the University of Southern California. He did his graduate work with Professor Sidney W. Benson in the area of "Additivity rules for the

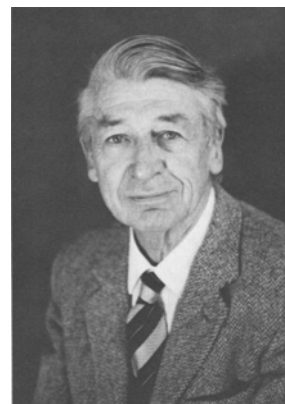
estimation of molecular thermodynamic properties." His graduate work resulted in the publication of four papers; three in the *Journal of Chemical Physics* and one in the *Journal of Physical Chemistry*. His last paper coauthored with Professor Benson appeared in 1958 in the *Journal of Chemical Physics* and has been cited well over 100 times and is considered a classic paper in the area of thermochemical kinetics. He received his Ph.D. degree by age 24 and worked for a brief period of time for the Bureau of Mines and then in the aerospace industry for Douglas Aircraft. He made his fortune, however, in the real estate business and is perhaps best known as the owner of the Los Angeles Lakers. Although Dr. Buss did not extensively use his degree in chemistry he has pointed out "Education gives you freedom." He never forgot the academic institutions that provided him with that education and in 1992 he provided a leading gift that allowed endowment of the annual "Sara Jane Rhoads and Rebecca Raulins Lecture Series in Organic Chemistry". This lecture series is now in its 21st year and has provided both students and faculty the outstanding experience of meeting and interacting with a large number of nationally and internationally renowned organic chemists

Joseph Blair Williams (July 7, 1940-September 9, 2012) was a member of the Sigma Chi Fraternity, the American Chemical Society, and the Society of Plastics Engineers. He received his B.S. in Chemistry from the University of Wyoming in 1962, and was a retired senior research chemist from Lonza, Inc. Williams was a member of St. Elizabeth Ann Seton Catholic Church. He is survived by his wife, two daughters, his brother, and numerous family members.



In Memory of Professor Geoffrey E. Coates (4/17/1917 to 1/10/2013)

In my field of chemistry (organometallics) Professor Geoffrey E. Coates is a very well recognized name. During my travels over the years giving seminars across the country, when my hosts learned that I came from Wyoming one of the first questions was always, 'Wyoming? Isn't that where Geoffrey Coates was?'. I then explained that Prof. Coates in fact still resided in Laramie Wyoming, but I am sad to say that I cannot claim that now since Prof. Coates passed away this spring on January 10th at the age of 95.



I met Prof. Coates when I was first hired as an assistant professor at Wyoming in the Fall of 1986. I went to his office to introduce myself, but I'm afraid my initial contact didn't go so well: I was effectively shooed out of his office after I failed to answer some inorganic chemistry questions to his satisfaction. In subsequent years I did somewhat better and enjoyed my discussions with him. Geoffrey retired from the Faculty at Wyoming in 1979 for health reasons, but recovered fully and was quite active in the department for decades afterwards. One of his great enjoyments in life was travel, and for many years he liked to book extended passages on commercial freighters in the Pacific Ocean; unlike gaudy cruise ships, these vessels plied the ocean between obscure islands with frequent stopovers. From these trips and many others, Prof. Coates would send postcards (many of which I still keep). Coates was very frustrated when these freighters stopped allowing him passage after the age of 80, even though he was in very good health.

Speaking to Prof. Coates was like a living history lesson (see the biography below). Here was a man who was a contemporary of major figures in science who laid the foundation for modern atomic theory. I bring up these aspects of Coates' life when I lecture general chemistry classes, to show just how recent the foundations of modern chemistry that we take for granted really are. In the early 2000's I was talking with Prof. Coates about his time during WWII working in a magnesium factory. While there, he noticed that large crystals of metallic magnesium had deposited in the exhaust pipes and he took some samples. He presented me with one of these, which I keep in my office and show to visitors

In 1988, our Chair at the time (Derek Hodgson) established the annual Geoffrey E. Coates Inorganic Lectureship; this year will mark the 26th Coates Lecture, which has included many of the biggest names in the field. We are honored to continue this lectureship in honor of the impact Prof. Coates has had both on our department and on the fields of inorganic and organometallic chemistry.

A few paragraphs cannot do justice to Prof. Geoffrey Coates' long and distinguished life and career. Below I have excerpted a portion of a biography written for publication in the first journal devoted to organometallic chemistry.

Biography of Geoffrey E. Coates

(modified from a biography by Frank Glocklin, published in the *Journal of Organometallic Chemistry*, 1987, vol. 325)

Geoffrey Coates was born in London on the 14th May 1917, and, unusually, both of his parents were chemists (Note: Geoffrey's father did postdoctoral research with Fritz Haber, who received the Nobel Prize in 1918 for developing the catalytic synthesis of ammonia, a process which is essential to modern society). His earliest memories include being smothered with cushions during a WWI air raid. When he was 3 years old he moved to Swansea where his father, J.E. Coates, was the Professor of Chemistry for many years. Geoffrey was educated at Clifton College, Bristol, and in 1935 he was awarded a scholarship to Queen's College, Oxford where he graduated with First Class Honors in Chemistry in 1939. Geoffrey Coates witnessed firsthand many of the seminal scientific events of the 20th century and encountered major historical figures. In addition to attending lectures by J.J. Thompson (the discoverer of the electron) and Chadwick's seminar announcing the discovery of the neutron in 1932, he toured Europe in 1935 (he was encouraged to learn German, the dominant language of chemistry at the time) and had a close-up (~ 5 foot away) encounter with Adolph Hitler at a Beethoven concert.

His first research was with Dr. L.E. Sutton at Oxford and was concerned with thermochemistry and dipole moment studies on aromatic organic compounds. The onset of the war resulted in his abandoning research work at Oxford and, up until 1945, he was attached to the research department of the Magnesium Metal Corporation in East Swansea. There he developed an interest in electrochemistry, and his early papers included a determination of the standard electrode potential of magnesium and studies on the acid and alkaline corrosion of magnesium and its alloys.

At the end of the war he was appointed to a lectureship in inorganic chemistry at the University of Bristol (1945-1953), and it was at this stage, possibly influenced by earlier contact with N.V. Sidgewick, that he turned to organometallic and coordination chemistry. At this time the field of organometallic chemistry, a field that is concerned with the interaction between metals and organic molecules, was entering a phase of exceptional growth and understanding. For metals their organo derivatives posed exciting problems for accepted theories of structure and bonding, and in many cases there was the additional challenge that chemical studies required considerable experimental finesse. This combination of structural novelty and refined experimentation was one reason for Geoffrey Coates's lifelong interest and dedication to organometallic chemistry.

At Bristol his work was largely concerned with organo derivatives of beryllium and gallium. Coates showed that dimethylberyllium, an

infinite 2-dimensional polymer, could be broken down into small molecular units by reaction with a variety of Lewis bases. Among the weaker Lewis bases studied was the foul-smelling dimethyltellurium, which even contaminated the typescript of the paper submitted to the Chemical Society to such an extent that it was rapidly returned with the comment that "it stinks". Exposure of the pages to bromine vapor cured the smell, and the paper was duly published.

In 1953 Geoffrey Coates was hired as the Departmental Chairman and Professor of Chemistry at the University of Durham; this must be counted the most creative and productive part of his career. When he was appointed the chemistry department had few facilities for research and very poor teaching laboratories. Before he left it had, largely thanks to his personal endeavors, one of the best-designed chemistry departments in the country, incorporating many features that have been widely copied elsewhere. As Head of chemistry his attitude towards younger staff was to give them help and support without inhibiting their independent scientific development.

Some of his most interesting chemistry concerned the formation and structural characterization of coordination polymers formed by Cu-, Ag-, and Au-alkynyls and their Lewis base complexes. Other papers from this period were concerned with the chemistry of structurally interesting organo derivatives of magnesium, gallium, indium, and thallium and of zinc, cadmium and mercury. However, Coates is mostly recognized worldwide for two things: (1) His major (and unparalleled) contributions to the organo and coordination chemistry of beryllium, and (2) Primary authorship of the first texts on organometallic chemistry.

In 1958, Coates was asked by Methuen Publishing to write a monograph on organometallic compounds. This small text (197 pages) was followed by a significantly larger 2nd edition in 1960, and owing to rapid expansion of the field, an even larger text with co-authors K. Wade and M.L.H. Green was subsequently written. This last edition remains a landmark in this field of chemistry and was the standard text used by Colleges throughout the world for at least 20 years.

In 1968 Coates left Durham to become Head of the Chemistry Department of the University of Wyoming at Laramie. Here his work was devoted exclusively to beryllium, and he discovered examples of cyclometallation reactions between R, Be and azomethanes of the type $\text{PhCH}=\text{N}^t\text{Bu}$, and the formation of a cubane-type molecule as the product of the reaction between RbO^tBu and Et_2Be . At Wyoming, he had only one Ph.D. student, Richard Andersen. Andersen was an exceptional student: after doing postdoctoral studies with Nobel Laureate Geoffrey Wilkinson, Andersen accepted a faculty position and is currently a Professor of Chemistry at UC Berkeley. At Wyoming, Coates had a significant impact on the general chemistry curriculum. An enthralling lecturer, Geoffrey influenced thousands of UW students. His style included memorable chemistry demonstrations- many of his demonstration materials still reside in the chemistry demonstration room. In recognition of his dedication to undergraduate education, the Coates Teaching Assistant Award was established in 1980. This award is given each year to the outstanding chemistry teaching assistant. As part of this award, a copy of Coates' original chemistry lecture demonstrations is presented to the recipient.

In 1979 Geoffrey took early retirement from the University of Wyoming owing to ill health, but thankfully recovered and until recently was active as an Emeritus Professor in the Chemistry Department. Geoffrey regularly attended lectures in both chemistry and geology, and began to tour the world extensively. In his seventies he began a series of freighter voyages, first across the Atlantic and later to Southeast Asia, New Zealand, Indonesia, Malaysia, and Fiji. A final voyage was taken to South America; unfortunately after that Coates turned 80 and was not permitted as a passenger on commercial freighters. Geoffrey Coates continued to reside in Laramie Wyoming. In 1987, in recognition of the substantial impact of his career in chemistry, the Geoffrey Coates Inorganic Lectureship was established and for the past 23 years internationally recognized lecturers have honored Coates with their presentations.

The following are some personal observations given in the concluding paragraphs of Glocklin's 1987 biography:

Geoffrey Coates has a distinctive manner that sometimes conceals the warmth of his personality. Among his many virtues is his great breadth and depth of knowledge of chemistry quite outside his own research interests, and his willing and enthusiastic discussions of other peoples' research problems. As a lecturer he was outstanding and entertaining, especially when performing experiments in front of a class.

An appreciation of a colleague would not be complete without some reference to other aspects of his life. Geoffrey Coates married Jean Hobbs while she was a medical student at Bristol, and their daughter Helen was born just after her mother qualified. Their son Peter was born in Durham. The Coates family has always been well known for their hospitality and for the way in which they entertain students. There must be many who have long since put chemistry behind them who will recall congenial evenings spent in their company.

FRANK GLOCKLIN

*Inorganic Chemistry Laboratory,
University of Oxford,
Oxford (Great Britain)*

Congratulations to our High Achieving Students!

Several of our Chemistry students were honored in the last year, starting with the Keith and Thyra Thompson Honors Convocation in October, 2012, and ending with our spring Awards Banquet. We'd like to say Congratulations to all, and thank you for being superb students!

Keith and Thyra Thompson Honors Convocation honorees:

Ameen Ahmad Alabdulaal, Samuel Bartko, Paul Bonifas, Ching-Rong Chung, Christina Davison, Jennifer DeLong, Patrick Dilsaver, Frances Domenico, Kyle Duffee, Sakun Duwal, Levi Hamilton, Alyssa Hughes, Joshua Jones, Claire Korpela, Jared Krysl, Carry McCarthy, Kendra Moore, Jennifer Morkemo, Spencer Moul, James Moulton, Drew Newman, Christopher Nordyke, Erik Peterson, Rachael Piver, Ashlin Porter, Christopher Robinson, Bradley Schmidt, Steven Schoeber, Dominique Schoech, Della Simmons, Robert Slipp, Aaron Spurlock, John Stacy, James Thorne, Travis Wells, Sarah Wimpenny, Emily Woodard, and Haonan Zhong

Spring 2013 Awards Banquet honorees:

Outstanding Freshman Award:

Jessica Hunt and Jacob Schmied

Outstanding Junior Award:

Drew Newman

Outstanding Sophomore Award:

Claire Korpela and Stanley DeVore

Outstanding Senior Award:

Erik Peterson

CRC Press Freshman Chemistry Achievement Award:

Jonathon Kephart

Undergraduate Inorganic Chemistry Award:

Ashlin Porter and John 'Jack' Stacy

College of Arts & Sciences Board of Visitors Student Service Award:

Gregory Waetzig

Arthur Gray Janssen Award:

John 'Jack' Stacy

Howard H. Heady Scholarship in Chemistry:

Samuel Bartko

R. Owen Asplund Academic Excellence Award:

Claire Korpela

R. Owen Asplund Undergraduate Research Award:

James 'Tom' Moulton

Rebecca Raulins Undergraduate Research Prize:

Ashlin Porter

Clifford C. Hach Memorial Scholarship:

Jacob Horlick-Cruz, Kenneth Madsen, and Dylan Sether

Superior Student Awards:

Ameen Alabdulaal, Salman Almutawa, KariAnna Baber, Borden Ball, Scott Coffin, Jacqueline Crank, Stanley DeVore, Bonnie Dress, Kyle Duffee, Sakun Duwal, Erin Fulton, Joshua Geiser, Katelyn Gonterman, Bhagya Gunatilleke, Joshua Henry, Jessica Hunt, Matthew Hurlock, Joshua Jones, Lamber Kabwar, Jonathon Kephart, Claire Korpela, Jared Krysl, Britni Luther, Maira Magana, Josh Messer, Kendra Moore, Jennifer Morkemo, Spencer Moul, James 'Tom' Moulton, Clark Newbold, Christopher Nordyke, Amanda Olive, Christopher Parton, Jacob Paulson, Erik Peterson, Hailey Pince, Rachael Piver, Ashlin Porter, Jencee Reardon, Teresa Reilly, Ryan Reynolds, Juliet Romero, Jacob Schmied, Brita Schroeter, Yifei Shao, Della Simmons, Aaron Spurlock, John 'Jack' Stacy, Benjamin Staldine, Aaron Strom, Gregory Waetzig, Mikel Walbridge, Kaitlyn Weitzman, Travis Wells, Emily Woodard, Dihua Xue, and Haonan Zhong.

UW International Undergrad Student Award for Excellence in Internationalization:

Lambert 'Nike' Kabwar

Continued on pg 13

The Students Aren't the Only High Achievers

The Chemistry Department Faculty and Staff have been a busy bunch in the last year, as is evidenced by the many awards, accolades and grants they received!

Associate Professor **Franco Basile** was chosen to serve on the College of Arts & Sciences Central Committee. Professor **Ed Clennan** received \$491,210 from the National Science Foundation for research on 2nd

Generation Pyrylogen and 1st Generation Viologen Electron Transfer Catalysts.

Professor **Robert Corcoran** received the "Thumbs Up" award from the A&S Student Council in recognition of Outstanding Positive Contribution to the University of Wyoming.

Senior Lecturer **Patricia Goodson** was chosen to serve on the College of Arts & Sciences Teaching Committee

Assistant Professor **Brian Leonard** received the NASA Research Initiation grant.

Professor **Bruce Parkinson** received the SER Graduate Assistantship fund for "Electrode position as a Method to Fabricate Copper Zinc Tin Sulfide/Selenide Thin Film Solar Cells."

Dr. Parkinson was the invited speaker at Northwestern University for the Marple –Schweitzer Lecture series, as well as the invited speaker for the Ross Lecture on Colloid and Surface Chemistry at Rensselaer Polytechnic Institute.

Dr Parkinson was featured in the January 2013 edition of Research Wyoming magazine for his solar energy research.

The **Parkinson Research Group** had its SHArK Project (Solar Hydrogen Activity research Kit) named as one of the Top Ten Citizen Science Projects of 2012.

Professor **Dean Roddick** received \$432,000 from the National Science Foundation for "Hydrocarbon and Alkene Conversion Chemistry with PFAP Catalysts".

Research Scientist **Doug Wheeler** received his 25 years of service award.

Assistant Professor **Jing Zhou** received a \$506,000 NSF Career Grant and an A&S grant for \$84,188.

Office Associate **Shawn Lively** received the Mortar Board Honor Society "Tip of the Cap" award for exceptional contributions to the University of Wyoming and inspiration of students.

Senior Office Assistant **Jessica Parker** received the "Unsung Hero" award for outstanding duties performed in the workplace.

Congratulations to everyone for a job well done!

Continued from pg 12

Wyoming NASA Space Grant Undergrad Research Fellowship:

John 'Jack' Stacy

Nielson Excellence Fellowship in Energy Studies:

Sakun Duwal

Wyoming EPSCoR:

Sung-Jun Yoon

A&S Summer Independent Study Award:

James 'Tom' Moulton

INBRE Summer Fellowship

James 'Tom' Moulton

INBRE Transfer Scholar Grant:

James 'Tom' Moulton

Sara Jane Rhoads Graduate Student Research Award

Gevorg Sargsyan

In the news.

Former Department Head John Maurer (DH 1977-1980) was recently featured in the Laramie Boomerang on the event of his 90th birthday, which was April 3rd. The following excerpt is paraphrased from “Supporting the front line” in the Laramie Boomerang, April 6, 2013.

Born in 1923, John Maurer met his future wife in 1926. They were friends first, and many years later dated and married in 1946. Prior to their marriage, John enlisted in the Navy, and was shipped out to the Western Pacific in 1945. Despite being in a war zone, he never picked up a gun or fought on the front lines. Instead, he helped run a propaganda station on the island of Saipan. When describing that period in his life, he said “I don’t have any war stories to tell. We did all kinds of things in the background. Not everybody is on the front line. There’s got to be somebody supporting the front line.”

Dr. Maurer was with the University of Wyoming for 35 years, beginning after he earned his Ph.D. in Organic Chemistry at the University of Iowa. During his tenure with the Chemistry department, John earned several awards and accolades. His children remember that he always took those very humbly.

John’s latest achievement was his selection to travel to Washington, D.C. with the Honor Flight Wyoming program. Even during this trip, his well known desire to support others was shown. He’s quoted as saying “Everyone there was so friendly and helpful. But I didn’t use a wheelchair. As a matter of fact, part of the time I was there, I pushed somebody in a wheelchair”

Dr. Maurer, we thank you for your service to your country, and to UW. We have benefited greatly from your contributions. We hope your birthday was a very memorable day, and that you have many more.

Chemistry Summer Seminar

**CHEM 5500; Topics in Physical Chemistry, July 22-24, 2013
Summer 2013
Presented by Dr. Peter Stair, Northwestern University
CRN 30504**

Topics covered in this series:

Principles of UV and Resonance Raman Spectroscopy in Analysis of Catalytic Systems

Supported Vanadium Oxide Catalysts for Oxidative Conversions of Organic Molecules

Synthesis of New Catalytic Systems Using Atomic Layer Deposition

Peter Stair received a B.S. in Chemistry from Stanford University in 1972 and a Ph.D. from University of California, Berkeley in 1977. He has been on the faculty at Northwestern University since 1977. He is Professor of Chemistry, Director of the Center for Catalysis and Surface Science and of the Institute for Catalysis in Energy Processes. He is a Senior Scientist in the Chemical Sciences and Engineering Division at Argonne National Laboratory and Deputy Director of the Institute for Atom-efficient Chemical Transformations. His research interests are in the synthesis, characterization, and physical properties of heterogeneous catalysts. He has worked in surface science and in-situ Raman spectroscopy. His goal is to develop fundamental understanding in catalysis science that leads to advances in industrial chemistry and energy technology. He is a past recipient of the Alexander von Humboldt Senior Scientist Award and recipient of the 2010 ACS George Olah Award in Hydrocarbon or Petroleum Chemistry.





University of Wyoming Foundation
 1200 East Iverson Avenue
 Laramie, WY 82070
 (307) 766-6300 * (888) 831-7795

Please indicate any changes to your name and/or address:

 First and Last Name

 Address

 City, State, Zip Code

Please accept my/our gift to Chemistry in the amount of:

\$100 \$250 \$500 \$1,000 Other \$

Yes! I/we want to help the Chemistry Department. Please direct my/our gift to:

Chemistry General Donation Fund

Scholarship Funds:

Owen Asplund Prize Fund

Howard Heady Scholarship Fund (Chemistry)

Arthur Gray Janssen Scholarship

Rebecca Raulins Undergraduate Research Fund

Sara Jane Rhoads Graduate Research Award

Hans Peter Richert Memorial Fund

Victor Ryan Scholarship Fund

Steik-Wilkie Graduate Fellowship in Chemistry Fund

Other funds:

Clifford C. Hach Gift Fund

Patrick Sullivan Memorial Fund

Frontiers in Physical Chemistry

PAYMENT INFORMATION:

ONLINE: Make a payment online using our secure server: www.uwyo.edu/giveonline.

PHONE: Call the University of Wyoming Foundation during normal business hours: (307) 766-6300 or (888) 831-7795. MAIL: Make a payment by mail.

Yes, please send me information about planned giving (wills, trusts, etc.)

Yes, UW is named in my will.

Yes, my company matches my gifts. I have included a form from my company.

My preferred e-mail address is _____

My preferred phone number is _____

Thank you!

Your gift is tax deductible as provided by law.

N13CH



Nonprofit Organization

US POSTAGE PAID

University of Wyoming

Department 3838
1000 E. University Ave
Laramie, WY 82071

