UNIVERSITY OF WYOMING
DEPARTMENT OF CHEMISTRY

CHEMISTRY NEWS

SPRING 2011
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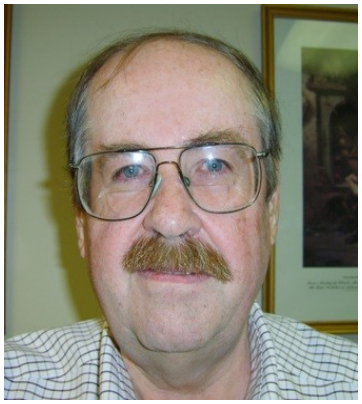
LETTER FROM THE HEAD



Ed Clennan
Department Head

The 2010-2011 academic year has been a very good one for the Department of Chemistry. We were fortunate to receive a significant increase in our support budget so we could address needs in our undergraduate laboratories. We are also at the beginning of a renovation of the physical science building that will involve replacements of many hoods and updating of the air handling system. It will undoubtedly create inconveniencies during the summer months but everyone is willing to tolerate some upheaval since the building upgrade will enhance both our research and teaching missions. This year we were sorry to loose Brandy Vialpando in our front office. She left to take a teaching job in the Laramie School system. Fortunately, we were authorized to hire into the position and were delighted to welcome Jessica Parker as our new Office Assistant Senior. Jessica is a Laramie native, and proud of it (she should be). She is married to her high school sweetheart and has 2 wonderful children. She reports that she enjoys spending time with her family, reading, camping, 4-wheeling, and attending rodeos. She also likes animals and helping others. Jessica joins our current office staff consisting of Shelley Straley, Shawnn Lively, and Carmen Candelaria.

This academic year we had two new faculty join our ranks. Professor Krisztina Varga received her B.S. degree in chemistry from St. John's University in New York and a Ph.D. in Chemistry from Columbia University. She has also had postdoctoral appointments at the University of Oxford in the UK and at the University of Colorado at Boulder. She plans to use her solid state NMR expertise to study proteins, membranes and live cells. She is especially qualified to explore this area because along the way she also received an M.S. degree in biology. Professor Varga is a new type of hire for the chemistry department. She is currently 50% at the University of Wyoming and simultaneously works for Varian/Agilent as an NMR applications scientist. Our plan is to slowly increase her appointment so that she will become a fulltime UW employee simultaneously with or better yet prior to her tenure and promotion to Associate Professor. Her husband, Milan Balaz, is also on the faculty in the Chemistry Department. Our second new faculty member, as I reported in last years' newsletter, is Brian Leonard. Professor Leonard is off to a very good start and has set up an impressive laboratory to study solid-state inorganic chemistry. This is a new research area for the department but a very topical one given the increased nationwide and State of Wyoming interest in energy science. We welcome both these new faculty members to the department and we are looking forward to working with them for many years to come.

This year I am very happy to report that two of our young faculty, Debashis Dutta and Jan Kubelka have put together very strong cases

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DEPARTMENT OF CHEMISTRY SUMMER LECTURE SERIES:

Professor Tom Mallouk from Pennsylvania State University

June 13th—17th
11:00 am -12:00 pm
Classroom Building Room 310

Visit www.uwyo.edu/chemistry for more information

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for tenure and promotion to Associate Professor. I fully expect that both cases will be approved prior to the next academic year. Professor Kubelka did his undergraduate work at Charles University in Prague, Czech Republic and his Ph.D. at the University of Illinois at Chicago. He then went on to become a Research Fellow at the National Institutes of Health in Bethesda Maryland. Since joining the University of Wyoming he has built a nationally recognized well-funded program in biophysical chemistry. His area of expertise is protein folding and he uses both experimental and computational tools to explore this very complicated but very important chemistry. Professor Dutta did his undergraduate work in Chemical Engineering at the Indian Institute of Technology in Mumbai (Bombay) India and his Ph.D. work also in Chemical Engineering at the University of Notre Dame. He joined the University of Wyoming after completing postdoctoral research appointments at Oak Ridge National Laboratory and at the University of North Carolina at Chapel Hill. Professor Dutta has built a well-funded nationally recognized group in microfluidics. He and his group do state-of-the-art experiments to enhance separations on a chip including experiments to improve the sensitivity of the very important ELISA bioassay. This past year the Department of Chemistry was especially pleased to receive federal stimulus funds that we used to buy three large pieces of equipment for our undergraduate laboratories. A differential scanning calorimeter with thermogravimetric analysis capability was purchased for use in our advanced laboratory. An atomic force microscope/scanning tunneling microscope (AFM/STM) was purchased to use in our Physical Chemistry Laboratory. This purchase nicely complements our current plan to expand our undergraduate Physical Chemistry laboratory from a one- to a two-semester offering/requirement. Finally, funds were also used to purchase a fluorescence microscope that will be used in our undergraduate analytical laboratories. These new acquisitions along with our other undergraduate instrumentation holdings will provide our students with the hands-on technical training that will make them very attractive to potential employers in an increasingly competitive marketplace.

Our faculty continue to excel in both their research and teaching contributions to the University and Profession. Professor Parkinson, who holds a joint appointment in Chemistry and in the School of Energy Resources, was selected this past year as the J. E. Warren Distinguished Professor of Energy and the Environment. This Professorship was awarded to Bruce for his demonstrated excellence and contributions to the area of energy science and in particular to photovoltaics. Patricia Goodson, for the second year in a row, received a Promoting Intellectual Engagement (PIE) Award for her outstanding contributions to the teaching of first year courses.

This year for the first time in many years the Chemistry Department is embarking on a fund raising campaign with the goal to endow a lecture series called "Frontiers in Physical Chemistry". The opportunity afforded our undergraduate and graduate students to meet and interact with outstanding scientists from around the world is a critical component of their educational experience. The chance for students in their scientifically formative years to hear about cutting edge chemistry from nationally and internationally renowned chemists can be a career defining experience. This lecture series will join our Hach Lecture (analytical), the Coates Lecture (inorganic), and the Sara Jane Rhoads and Rebecca Raulins Lecture (organic) series in providing our students with a well-rounded view of important problems that they will have a chance to help solve in the years to come.

I want to finish, as always, in thanking all of you for your outstanding support for the department. We are all very proud of your achievements and proud of the fact that you have allowed us play a small part in your careers. I also want to invite all of you to visit our newly designed website (http://uwadmnweb.uwyo.edu/Chemistry/). I think you will find it interesting. Please keep in touch during the coming year, we are always delighted to hear from you!

Best Regards,

Ed Clennan

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

Updated information on what's happening in the Chemistry Department including information about our fall and spring speaker series.

Dr. Brian Leonard joined the Department of Chemistry here at UW as an Assistant Professor in August of 2010. Brian was born in central Nebraska and received his undergraduate education at the University of Nebraska Kearney. He earned his Ph.D. at Texas A&M University under the direction of Raymond Schaak working on intermetallic nanomaterials. After completing his Ph.D., Brian spent two and a half years in upstate New York at Cornell University, working for Francis DiSalvo. During his postdoctoral studies, he was investigating platinum based Polymer Electrolyte Membrane (PEM) Fuel Cells catalysts. Brian's research interests span a variety of solid state nanomaterials chemistry. Currently, the main emphasis of research in the Leonard group focuses on developing new non-precious metal catalysts for fuel cell applications. Metal carbide materials, which are known for their extreme hardness, high melting points, and stability, have an electronic structure that is similar to precious metals and have been used as a replacement catalyst for several other industrial applications. The Leonard group is currently looking into low temperature synthetic routes for synthesizing metal carbides as high surface area nanomaterials. Brian's group currently has one graduate student, Yagya Regmi, and two undergraduates, Nick McDougall and Greg Waetzig. Yagya is a 1st year graduate student studying the synthesis of bimetallic oxide nanoparticles and their conversion into bimetallic carbide compounds. Nick, who is a senior, is studying the conversion of supported single metal nanoparticles to metal carbides through a variety of carburization techniques. Greg, who is a sophomore, is studying the shape controlled synthesis of metal carbide nanowires from carbon nanotubes. Brian is keeping busy with getting the lab set up and applying for funding, and is very excited about his first summer of research in Wyoming.

In addition to working in the lab, Brian enjoys several hobbies including mountain biking, hiking, and restoring classic cars. He currently owns several hobby cars including a stable full of mustangs and an El Camino. He is looking forward to summer in Wyoming and enjoying the mountains and outdoor activities.

FACULTY NEWS


Dr. Brian Leonard

The **Leonard** research group was established this past fall and is investigating novel carbide materials for use as catalysts in fuel cells. The group currently contains two undergraduate students and one graduate student. **Yagya Regmi** (1st year PhD student) joined the group in the fall and helped organize and inventory the chemicals and equipment throughout the lab. He has done well with his courses and exams and is looking forward to spending more time in the lab. He is currently investigating the synthesis of mixed metal oxide nanoparticles and their conversion to multi-metallic carbide materials. The goal of this project is to obtain compositional control over the resulting carbide nanoparticles and thus tuning them for catalytic fuel cell reactions. **Nick McDougall** (senior, Chemistry Major) also joined the group last fall and is currently investigating solution based reduction methods for synthesizing metal carbide nanoparticles. **Gregory Waetzig** (sophomore, Chemistry and Chemical Engineering Major) joined the group in early 2011 and has been working on making carbide nanowires and tubes. Using carbon nanotubes as a reactive template, he has shown that he can react bulk metal powders with carbon nanotubes in a salt flux to form carbide nanowires. Greg will be attending the National ACS conference in Anaheim this spring as part of the local ACS club.

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FACULTY NEWS CONTINUED FROM PAGE 3

Dr. David Anderson

The **Anderson** group continues to study the chemistry that occurs at liquid helium temperatures (-452 °F) in crystals of solid molecular hydrogen doped with reactive radical species. These fundamental studies test the limits of chemistry at extremely low temperatures. Currently we are using an ArF laser to study the photochemistry of a bunch of different molecules. **Sharon (Cassie) Kettwich** successfully defended in July of 2010 and started a research/ teaching position at the Air Force Academy in Colorado Springs. Cassie enjoys her new job and is conducting research polymers and mentoring cadets in undergraduate research. **Leif O. Paulson** successfully defended on April 12, 2011. Leif will start full-time at the Department of Environmental Quality in Cheyenne, Wyoming and is happy to stay in Wyoming and work to help protect the environment here. For her off-term at Dartmouth College Kylie Kufeld is an undergraduate researcher in the Anderson group working on project life – generating biological molecules in H_2 ices. Dr. Anderson is happy to announce that he is finally growing up and is engaged to be married to Mary B. Crane. The two will honeymoon in San Diego in May and then Dr. Anderson will get back quickly to help run the NSF summer REU program with Prof. Hoberg focusing on chemistry research in energy science here at UW.

Research scientist **Navamoney Arulsamy** continues his research on the synthesis of nitroxylate (NO^-) and nitric oxide (NO) releasing reagents. Organic anions such as those derived from diethylmalonate and methylacetoacetate react with NO forming a N,O-heterocyclic trans-N_2O_2 group containing sydonate and acyclic cis-$N_2O_2^-$ diazeniumdiolate salts. New diazeniumdiolate products are obtained from the reaction of N-alkylhydroxylamines with NO. Preliminary results indicate that the diazeniumdiolate products release NO under acidic conditions. Further studies are underway to establish the exact reaction conditions for the release of NO. Dr. Arulsamy managed the Departmental X-ray, EPR and ESI-MS facility. He trained new users in the acquisition of data by these techniques. Dr. Arulsamy taught the inorganic laboratory course CHEM 4100 in the fall semester. He introduced a new experiment on the construction of dye-sensitized solar cell. For the first time last year, Dr. Arulsamy also taught the *Energy Summer Institute*. This program brings together about twenty 9th graders from all parts of our state along with 3 or 4 high school teachers for a two-week course concerned with current topics in energy research. Dr. Arulsamy's course highlighted energy related research efforts in chemistry and was titled *Chemical Energy*. This was an exciting teaching experience for Dr. Arulsamy. The students too had high praise for his teaching.

Dr. Navamoney Arulsamy

It has been a very busy 2010-2011 academic year for **Dr. Franco Basile** with undergraduate teaching, several manuscripts published, committee work and a growing research group. Our group currently has 9 graduate students: **Mr. Sujit Kandar, Miss Joanne Slatter, Mr. Chenglin Liu, Miss Rong Zhou, Mr. Liang Lu, Mrs. Gwendoline Toh, Mr. Raj Mahat, Miss Zoe Gao, and Mr. Tristan Kinde** (who is co-advised with Prof. Dutta). Also, this Spring 2011 semester we have working in our lab two undergraduate students, **Heath Patterson** and **Jason Hinrichs** (both Chemistry majors at UW). We continue to be active in research areas in Analytical Chemistry and Mass Spectrometry as it is applied to a variety of problems in microbiology, protein chemistry, forensic sciences and new energy resources. Our DoD grant is in its third and final year and much progress has been made toward the development of a simple sample preparation unit for the detection of bio-weapons. The NSF grant is now on its 2nd year and is funding much of the new work being performed in our lab. Our lab is also making great progress in the development of techniques using thermal degradation for the detection and identification of proteins and microorganisms. We are currently expanding the application of this patented technology to the identification and spatial imaging of proteins directly from tissue sections, a new and exciting area of research for our group. With all the people working in the lab, this 2011 summer promises to be a very busy and hopefully a highly productive one.

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FACULTY NEWS CONTINUED FROM PAGE 4

Ed Clennan's research group during the 2010-2011 academic year consisted of two graduate students, **Will Welch** and **Xiaoping (Shawn) Zhang**, and one undergraduate **Mikel Waldbridge**. During the summer he also hosted a National Science Foundation REU student, Hongbo Liu. Welch decided he was more interested in Physical Chemistry and moved to the Physical Chemistry group during the spring semester. We will miss his help in the laboratory. The group is still interested in organic photochemistry and, in particular, in the design and use of new electron transfer sensitizers. During the past academic year we have published three peer-reviewed manuscripts in the Journal of Physical Organic Chemistry, in Tetrahedron Letters, and in Photochemistry & Photobiological Sciences.

Ed was busy this past year going to a Department Heads meeting in Oklahoma and giving invited lectures at the annual Physical Organic Mini-Symposium and at the University of Guelph in Canada.

Dr. Keith Carron

The **Carron** group is researching assays and biological materials using Raman spectroscopy. We have a new state-of-the-art Raman microscope at 808 nm and 1064 nm for looking at biological samples. On any day, we might have kidneys, livers, and lungs floating though the lab for analyses. Virginia (Ginny) Schmit is wrapping up her Ph.D. in molecular biology with studies of nanoparticle assays for biomedical applications. Ginny won a NASA fellowship this year. Ginny is planning to stay in the area after graduating and becoming a post-doc in the Carron group. **Brandon Scott** joined the Carron group in the spring of 2011 as a Ph.D. candidate. Brandon is a master nanoparticle maker and will work on our Lab on a Bubble (LoB) projects. Brandon won an INBRE fellowship this year. This summer we're looking forward to the return of (Ph.D. 2002) to work with us this summer on SERS/RNA work. Keith and **Rick Cox** (Ph.D. 1995) had an invited article, *Qualitative analysis and the answer box: a perspective on portable Raman spectroscopy* published in Analytical Chemistry this year.

Dr. Debashis Dutta

The **Dutta** research group at this point has five graduate students, **Tristan Kinde, Naoki Yanagisawa, Ling Xia**, **Basant Giri** and **Ravi Peesara** along with one post-doctoral researcher, **Brad Choi**. Currently, the group is involved in several projects focused on designing microfluidic devices relevant to analytical chemistry and energy applications. While Ling and Brad's projects are focused on designing enhanced electrophoretic and chromatographic separations in micro- and nanoscale channels, Tristan is working towards designing portable devices for bio-detection applications in a joint effort with **Prof. Basile's** group. **Naoki, Basant** and **Ravi** on the other hand (in collaboration with **Prof. Corcoran**) are involved in developing novel microfluidic assays that may enhance the sensitivity of ELISA methods. Last November **Naoki** and **Tristan** presented their research at the 2010 annual AIChE meeting held in Salt Lake City. At the same meeting, **Prof. Debashis Dutta** chaired a session on "Nanoscale Electrokinetics". This year **Ling** and **Naoki** also passed their preliminary examinations while **Basant** is getting ready to take it in the Fall. Research in **Prof. Dutta's** group is currently funded by the US Department of Defense (jointly with **Prof. Basile**) and the National Science Foundation.

The **Corcoran** research group has undergone some marked changes in the past year. Starting in Spring 2010 with just two undergraduate researchers, the group suddenly increased to postdoctoral **Ajaya Kumar Warrier**, graduate students **Melissa Gelwicks** and **Fidelis Ngwa**, and undergraduate **Nathaniel Kaan** in the summer and further increased in the fall with the addition of undergraduate **Tom Dawson**. Kumar and Ngwa have been focusing on the development of novel substrates for microfluidic-based ELISA assays, Kaan has been working on modification to microfluidic channel surfaces to improve separations of biomolecules, while Gelwicks and Dawson have been synthesizing compounds for photochemically based modification of microfluidic channels and solution phases.

Dr. Robert Corcoran

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Dr. Patricia Goodson

Patricia Goodson-This academic year, my teaching responsibilities were all focused on general chemistry, both the first and second semester courses, CHEM 1020/1030, and Organic Chemistry, CHEM 2440. This semester I was happy to receive the university "PIE" teaching award (Promoting intellectual Engagement in first-year courses) for the third straight year. This award is selected on the basis of on-line nominations from freshmen and sophomore students. As a nice touch, recipients also received home-baked pies from the university food service.

Dr. Jan Kubelka

Research in **Jan Kubelka**'s group research 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 undergraduate students, **Ben Anderson, Ginka Buchner, Jason Lai** and **Will Welch,** and an undergraduate student **Amy Reece. Ben**, **Ginka** and **Amy** focus on protein folding experiments, while **Jason** and **Will** work on computational projects. In the past twelve months we have published four journal articles (in *Biochimica Biophysica Acta* and *Journal of Physical Chemistry A* and *B*) and two others are currently under review. We have also written a chapter for the book *Methods in Molecular Biology*, which details our experimental methods for studying protein folding. The most recent results of our research were presented at the *55th Annual Meeting of the Biophysical Society* (Baltimore, MD) and at the *American Chemical Society 241st National Meeting* (Anaheim, CA). We are grateful to the National Science Foundation CEREER grant for supporting our work.

Dr. John Hoberg

The **Hoberg** group continues to focus on energy related projects, specifically the splitting of water using photocatalysts. **Jianqiang (Horace) Huo** has been working on the synthesis of terpyridines ligands that complex to platinum, and a variety of complexes have been made and are undergoing testing to produce hydrogen under irradiation. This work has lead to the recent submission of two papers and Horace is expecting to defend his PhD dissertation at the end of the summer. **Alyssa Pearson**, who joined the Hoberg group in summer of 2009, successfully completed her cumulative and preliminary exams this past year and is also working on the formation of hydrogen from water, using rhenium as the photocatalyst. A recent SER PhD graduate assistantship was awarded for her work and will provide support for the next two years. This work will also be aided by the efforts of two undergraduate students this coming summer, one from our NSF-REU program and by **Carrie McCarthy**, who will be funded by an A&S undergraduate summer research award. Dr. Hoberg was also awarded two university teaching awards this past year: an A&S Extraordinary Merit Award for Teaching and a "Top Prof" award from the Cap and Gown chapter of the Mortar Board. Neither of these would have been possible if not for the efforts of Prof. Clennan, our most awesome department chair, and Philip Henzlik, a former undergraduate student that survived and excelled in Hoberg's second year organic chemistry course. Many thanks to both of them for their efforts.

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Mark Mehn's research group continues to prepare catalysts of cheap abundant metals (like iron and manganese) for the activation of small molecules and to better understand biological processes. **Dylan Houghton**, a fifth year PhD candidate, continues to examine the interaction of iron and manganese with oxygen, peroxides, and superoxide. He has been able to generate a number of metastable intermediates and we use various spectroscopic methods to identify these species. The resonance Raman of these complexes is currently being acquired in collaboration with Prof. Brunold at the University of Wisconsin. **Paul Riedel** completed his master's thesis on the preparation of a number of iron, manganese and zinc complexes. One manuscript is already out, one is awaiting for review, and another is in the final stages of preparation. Paul successfully defended his MS degree and was recognized with a G.E. Coates Outstanding Teaching Award. After completing his degree Paul moved back to Wisconsin where he has been working as a substitute teacher. **Mattson Mathey**, a UW undergrad, has graduated and is headed to medical school. **David Granum**, a double major in Chemistry and Chemical Engineering, rejoined the group in the summer and is also headed to graduate school next fall. **Torrey Mullen**, another UW undergraduate researcher from chemical and petroleum engineering, has secured a position with Ecana Corp. Ana Begej, an NSF Summer Undergraduate Researcher, is completing her degree at Macalester College in St. Paul, MN. Our collaboration with Prof. Brad Pierce at the University of Texas Arlington to collect and interpret the EPR spectra of several of these paramagnetic species is going well. Mark has given talks and posters at Gordon Conferences, the NSF Inorganic Workshop, the International Conference on Coordination Chemistry in Adelaide, Australia and at Emory University. Two new first year students **Philip Miller** and **Suman Debnath** joined the group in December 2010.

Dr. Mark Mehn

Dr. Bruce Parkinson is a new distinguished professor of chemistry.

The **Parkinson** group now has 14 members, 5 post docs, 3 UW graduate students, 2 visiting graduate students and 4 undergraduate researchers. Research funding comes from the Center for Molecular Electrocatalysis at Pacific Northwest National Lab, the NSF-funded Center for Chemical Innovation at Caltech, the Basic Energy Sciences Division of the DOE and Dupont Central Research. The highlight of the group's 8 publications in 2010 is a report in *Science* where we were able to demonstrate for the first time collection of more than one electron per absorbed photon in a prototype photovoltaic device. This multiple electron generation and collection has the potential to increase the efficiency of future photovoltaic devices. Professor Parkinson was also appointed to the J. E. Warren Chair of Energy and Environment at UW. The endowment of the chair provides funds to recruit a graduate student for PhD studies in Chemistry at UW. **Jennifer Schuttlefield**, a former post doc in the group, is now an Assistant Professor of Chemistry at the University of Wisconsin at Oshkosh. She will be returning to UW during the summer of 2011 to continue expanding the SHArK (Solar Hydrogen Activity research Kit) Project, our outreach effort that involves high school and college students in the search for new materials that are capable of directly photoelectrolyzing water with sunlight.

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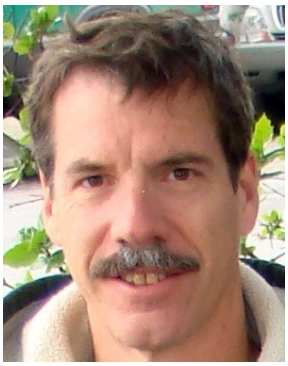

Dr. Dean Roddick

The **Roddick** group continues to enjoy funding for NSF and DOE-supported projects. Our group currently has four graduate students and a postdoctoral researcher. **Jeramie Adams** continues his postdoctoral research on both NSF and DOE-supported projects, and provides invaluable supervision and oversight to the research group as well as a number of undergraduate researchers. We are in our third and final year of DOE support for the chemistry of novel highly-oxidizing excited state rhenium (II) complexes that were pioneered by our late colleague, **B. Patrick Sullivan**. Jeramie continues to prepare new polyphosphine derivatives of Re(II) as well as Mo(I) for photophysical characterization by Russell Schmehl's group at Tulane University. This work will be reported in June at the annual DOE Contractor's Meeting in Annapolis, MD. Jeramie's NSF-supported research focuses on acceptor phosphine "pincer" chemistry of iridium. Two papers describing the iridium chemistry were published early in 2011, and several more manuscripts on spin-off projects are currently in preparation. **Thomas Parson** continues to work on characterization of alkene insertion intermediates in insertion reactions of $(dfepe)Pt(alkyl)(alkene)^+$ complexes. **Brian Gruver** plans to submit a paper on ruthenium PCP catalysts for alkane dehydrogenation this spring, which represents the first example of group 8 metal catalysis of this important transformation. Brian is finishing his second year of support by the by the School of Energy Resources, and will be presenting a talk on his research at the Fall National ACS Meeting in Denver. **Tamara Sibray** Continues her research project exploring the alkene oligomerization catalytic potential of neutral acceptor "PC" pincer complexes of platinum and has recently begun to explore analogous iridium chemistry. She is working on a manuscript for the platinum work and will also present this research at the Fall National ACS meeting. This past summer we hosted **Seth Warner** as an REU student. Seth came from Jamestown College in North Dakota and has accepted an offer to come to graduate school at Wyoming. Seth's REU project was under Brian Gruver's supervision and will result in a co-authorship on the ruthenium PCP catalyst paper. **Bhusan Thapaliya**, a first year graduate student, has recently joined the Roddick group. Bhusan (who hails from Kathmandu, Nepal) is working on developing new variations of acceptor chelate ligands. In non-chemistry news, Dean and Patricia are celebrating their 25th anniversary this July (as well as 25 years together at UW), and are making plans to spend it in Northern Italy.

Dr. Michael Sommer

Michael Sommer spent the fall semester working on updating the undergraduate physical chemistry lab curriculum. Along with Prof. Jing Zhou, Michael used some of the government "stimulus" funds to research and purchase a Scanning Tunneling Microscope and an Atomic Force Microscope for the p-chem lab. He is also in the process of extending the lab into a two semester course. In the fall, Michael started implementing a Classroom Response System, more commonly referred to as a "clicker," in his General Chemistry 1 (1020) class. Students generally liked the addition, although it did cause some issues with the coverage. Michael is hoping to use it again this coming fall and he is already planning all the changes that will be needed to ensure that no topics will have to be skipped. Currently, Michael Sommer is teaching Advanced General Chemistry 2 (1060) and Statistical Mechanics (5570) and is enjoying spending time with his 3 year old daughter.

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Dr. Jing Zhou

Jing Zhou's research group is in its 4th year at the UW Chemistry Department and the group currently consists of two graduate students, **Cheng Wan** and **Elfrida Ginting**. **Dr. Yinghui Zhou**, postdoctoral researcher, left the group last fall for her new exciting position as assistant professor in the Department of Physics at Xiamen University. Last year, the group hosted **Jie Pan** (exchange undergraduate student from Shanghai Normal University) and **Natalee Raymond** (Macalester University) for undergraduate research. The group has been making steady progress in research which focuses on the fundamental understanding of structure-property relationships of bimetallic nanoparticles as well as mixed oxide catalysts for their applications in the ethanol reforming, water-gas shift as well as CO oxidation reactions. The research results were presented at the 2010 American Vacuum Society International Symposium, American Chemical Society Meeting as well as the Rocky Mountain American Vacuum Society Meeting and were further reported in four peer-reviewed journal articles.

In Remembrance

Donald Wayne Larsen (B.S. 1952) passed away June 1, 2010. Donald graduated with honors with a B.S. in 1952 from UW. He served in the US Army Chemical Corps, the 53rd Chemical Laboratory in Hanau, Germany from 1954-1956. Donald married Mildred in 1959. Donald then attended the University of Wisconsin in Madison where he received his Ph.D. in 1960. During his career as a research chemist, he was awarded sixteen chemical patents and had four publications. He retired in 1994 and moved to Wheatland. He was a member of the American Chemical Society.

Dr. Maynard Slaughter, Adjunct Professor of Chemistry, passed away March 15, 2011 at Parkview Hospital in Pueblo, Colorado of cardiac arrest

Dr. James Carlton Aumiller, 69, died Sunday, March 20, 2011 of a heart attack. He was born February 18, 1942 in Denver Colorado. He served in the U.S. Navy from 1959 to 1963. He earned B.S. and M.S. degrees in chemistry from Fort Lewis College in Durango, Colorado and from Western Washington State College in Bellingham, Washington, respectively. He completed his Ph.D. at the University of Wyoming in 1973 under the direction of Professor Paul Blatz with a thesis entitled "Spectroscopic Studies of Selected Analogs of N-Retinylidene Schiff Base Hydrohalides". He then went on to a postdoctoral appointment at Larmar University in Beaumont Texas and then taught chemistry at Western Wyoming Community College from 1975 until his retirement in May 2003.

ALUMNI CORNER

JASON GUICHETEAU, PH.D.

In December of 2002 I got a less than subtle hint that it was time for me to complete my graduate work. Keith Carron, my advisor, strolled into my office and said, "I'm tired of you". In his defense he had put up with me for about 6 years. Over the course of the next spring, I finished up my research, got married, found a post doc position, put together my dissertation and successfully defended my thesis in June 2003.

Three days after my defense I headed east to start a Research Fellowship with U.S. Army Edgewood Chemical Biological Center (ECBC) at the Aberdeen Proving Grounds in Maryland. Eight years later I'm still here. I've been very fortunate to work alongside the brilliant scientist and engineers that make up not only my branch but the overall community at ECBC. Our mission is to develop operational solutions to counter chemical, biological, radiological, nuclear, and energetic (CBRNE) threats to US forces and the nation. My particular branch focuses on biological and chemical aerosol detection using frequency agile LIDAR systems and developing various Raman and surface-enhanced Raman techniques for detecting biological, chemical, and energetic materials. I thoroughly enjoy working for the Army and ECBC as I get to be involved in research that is not only exciting and wide spread in its breadth, but is highly unique. I've been involved in projects for bacterial spore detection using immunological techniques, chemical agent measurements, and trace detection of explosive materials in fingerprints, just to name a few. Outside of my research, I also get to see a broad spectrum of technologies come through our doors from the most basic research at the University level to advanced concepts and equipment ready to be deployed to soldiers' hands. I've had the opportunity to travel all across the U.S. presenting to small and large audiences, collaborating with businesses and other government agencies and even met and presented to a four star general, which was quite a moment. Overall I've been fairly lucky and thankful for my career and look forward to what the future may bring.

Finally, I'd like to take this opportunity to thank my graduate advisor. Keith Carron was not only an excellent mentor for those six years, but he also became my friend and colleague. He helped me through a lot of tough times and without his encouragement and support I'm not sure I would have seen graduate school through to the end. I still think about him walking into my office that day to get me motivated to finish. I now know he did it not because he was bored with me (maybe a little) but because he knew I was ready. Thanks Keith.

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

Alumni News

Sayanti Basu (Ph.D. 2009) After rotating through several different corporate divisions, Sayanti has returned to Houston and recently switched to full time catalyst development chemist at Celanese Corp. She has filed two memorandoms of invention thus far during her time with Celanese.

Byron Bennett (Ph.D. 1997) continues in his tenure track position at Idaho State University, working with 7 undergraduate researchers in his laboratory in biological application of transition metal complexes. Some of this work appeared in 2010 in *Bioorganic and Medicinal Chemistry*. Byron is finishing his term as Chair of the local ACS section. Outside of chemistry, Byron is trying his hand at triathlons and is working toward competing in an Olympic length event soon.

Jeffrey Butikofer (Ph.D. 2005) Jeff came up for promotion this past year at Upper Iowa University and was recommended for tenure. The only other truly exciting thing (in his mind) is his plan to go down to the Missouri-Arkansas border for a fishing trip over spring break.

Jiten Chatterji (Ph.D. 1967, ACS) of Halliburton Energy Services is the winner of the 2010 Oklahoma Chemist Award from ACS's Oklahoma sections. The award recognizes an outstanding chemist from industry or academia who has made highly successful contributions to chemistry within the state. Chatterji played a major role in the development of hydraulic-fracturing technology, which enable marginal wells to be productive. He also made significant contributions to the creation of defoamers, high-temperature fluid loss additives, and biodegradable cement dispersants. The award includes a $1,000 honorarium and a plaque.

Eric J. Hanly, M.D. (B.S. Chemistry 1996) joined a team of surgeons who practice at St Mary's Regional Medical Center in Grand Junction, Colorado. He is a nationally recognized expert in the field of minimally invasive laparoscopic bariatric surgery, which helps people manage their weight. Last year, Hanly served as a volunteer surgeon in Rwanda.

Brittany Hodges (B.S. 1998) Brittany and her husband, Rob Mathes, live in Denver, where she is currently the Manager of the Proteomic Mass Spectrometry Shared Resource at the University of Colorado, Denver. Brittany got her Ph.D. in Analytical Chemistry at Purdue in 2007 and did a postdoc at the University of Colorado, Denver. She, Rob, and their dog, Oliver, love being back in the west and being close to their friends and family again.

Eric Kalberer (Ph.D. 2004) continues to work as a research scientist at the Western Research Institute. His current emphasis is on bioasphalt (bio-sourced pavement binders). Eric has also agreed to serve as a Member at Large on the Local Wyoming ACS section Executive Council.

Ade Lau (B.S. 1996, ACS) is still working for Matheson in Longmont, Colorado. He and his wife Lisa (UW Pharmacy School Alumna) are very busy and entertained raising their 18-month old daughter, Adelynn.

Allyn Ontko (M.S. 1996) Allyn continues as an Assoc. Professor at Arkansas State University, doing research in the area of metal-assisted drug delivery and currently working on ways to overcome drug resistance in late stage ovarian cancer. Allyn is associated with ABI (Arkansas Biosciences Institute), a state funded research facility developed to advance the frontiers in medicine.

Dan Stasko (Ph.D. 1998) has been approved for promotion to associate professor at the University of Southern Maine, Lewiston-Auburn College.

Courtney Vowell (M.S. 2009) still holds a Research III position at the University of Pittsburgh under the direction of Professor Peter Wipf.

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Rebecca Wilson (B.S. 2004) and Jason Deboodt were married on May 23, 2009 in Loveland Colorado. Both Rebecca and her husband are pharmacists residing in Ft. Collins, Colorado.

Jami Zweifelhofer (M.S. 2005) Jami is in her 5th year working as a Mayo Clinic Pathology Department Quality Specialist in Rochester, MN. She loves what she does and appreciates working for such an outstanding organization. In addition to her husband, Luke and her children Hannah (seven), and Micah (four), Jami is expecting a baby in August.

The following students were acknowledged at our Annual Undergraduate Awards Luncheon on Wednesday, April 20, 2011

Department of Chemistry Awards

Outstanding Freshman Award
Drew C. Newman

Outstanding Sophomore Award
Christopher T. Nordyke

Outstanding Junior Award
Jonathan D. Kawulok

Outstanding Senior Award
Melissa J. Hoyer

CRC Press Freshman Chemistry Achievement Award
Aaron C. Spurlock

Undergraduate Inorganic Chemistry Award
Bradley M. Schmidt

College of Arts & Sciences Board of Visitors Student Service Award
Gregory R. Waetzig

Arthur Gray Janssen Award
Bradley M. Schmidt

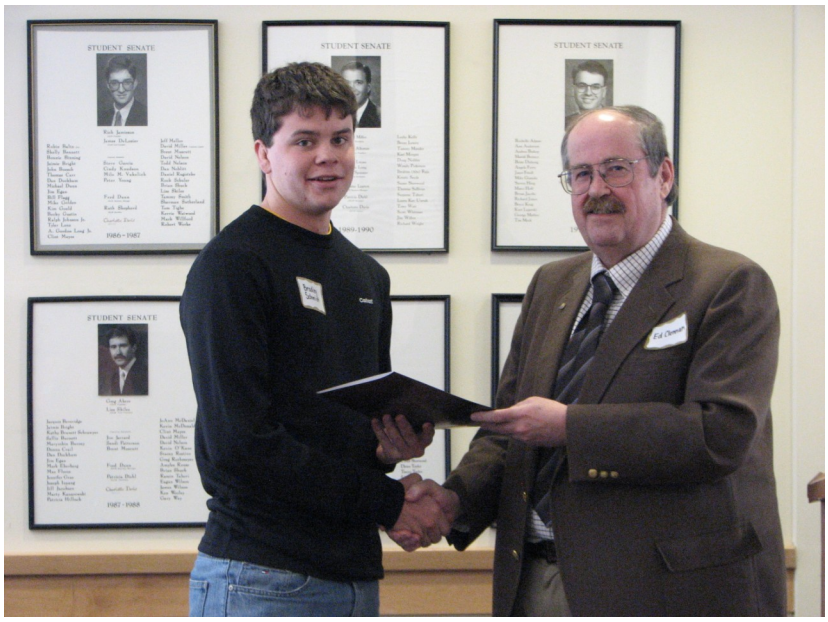
Howard H. Heady Scholarship in Chemistry
Levi A. Hamilton

R. Owen Asplund Academic Excellence Award
Carrie L. McCarthy

Owen Asplund Undergraduate Research Award
David M. Granum

Rebecca Raulins Undergraduate Research Prize
Thomas K. Dawson

Clifford C Hach Memorial Scholarship
Kyle D. Duffee and Mark T. Nelson



External Awards

American Chemical Society E.R. Schierz Scholarship
Bradley M. Schmidt

American Chemical Society Graduating Senior Award
Jenna E. Buffington

American Chemical Society Entering Freshmen Scholarship
Kyle D. Duffee

Phi Beta Kappa New Member Elect
Jenna E. Buffington
Jason S. Tyser

College of Arts & Sciences 2011 Outstanding Graduates
Jenna E. Buffington

A&S Sumer Independent Study Award
Carrie L. McCarthy

Pictures: Above: Bradley Schmidt Left: Jenna Buffington both receiving awards from Department Head, Ed Clennan.

Superior Student Awards

Ameen Ahmad Alabdulaal
Mohammed Mustafa Al Musabeh
Borden W. Ball
Samuel G. bartko
Paul Bonifas
Jenna Elaine Buffington
Paul J. Burke
Colten L. Carpenter
Jared B. Christopherson
Ching-Rong Chung
Scott L. Coffin
Katherine N. Darden
Thomas K. Dawson
Matthew R. Dilsaver
Patrick S. Dilsaver
Sakun Duwal
David M. Granum
Lesile Ann Graul
Levi A. Hamilton
Lorissa I. Higgins
Jason M. Hinrichs
Melissa J. Hoyer
Jennica Marie Jones
Nathaniel A. Kaan
Lambert L. Kabwar
Jonathan D. Kawulok
Jared L. Krysl
Sarah E. Maddy
Carrie L. McCarthy
Maria McNiven
Kendra L. Moore
Jennifer A. Morkemo
Torrey C. Mullen
Neil R. Neuberger
Clark R. Newbold
Drew C. Newman
Christopher T. Nordyke
Amanda M. Oliver
Jared T. O'Reilly
Bryan W. Overcast
Christopher M. Parton
Nathan H. Patterson
Christopher W. Robinson
Kevin J. Schilling
Bradley M. Schmidt
Murtaza Shabbir-Hussain
Robert B. Slipp
Aaron C. Spurlock
John M. Stacy
Jordan Thorn
James E. Thorne
Jason E. Tyser
Gregory R. Waetzig
Stephanie N. Wakefield
Mike L. Walbridge
Travis S. Wells
Benjamin G. Wimpenny

Chemistry Students pose after receiving a Superior Student Award on April 20th at the Annual Undergraduate Awards Luncheon. Students, faculty and staff enjoyed time away to eat good food and enjoy good company.

FRONTIERS IN PHYSICAL CHEMISTRY

Our new "Frontier in Physical Chemistry" lecture series has been well received by our friends and alumni who have responded very generously to our endowment campaign. Thank you very much. It is not yet completely endowed, nevertheless, enough progress has been made, that we have decided to have the inaugural lecture during spring 2012. We will provide you all with the details of this first lecture as they become available. If you would still like to make a donation for the "Frontiers in Physical Chemistry" lecture series please send it to the University of Wyoming Foundation, 1200 E. Ivinson Street, Laramie, WY 82070. Alternatively, if your choose to make your donation online (http://www.uwyo.edu/foundation/) please make sure to check "Other UW" and type in "Frontiers in Physical Chemistry" in the box in the Designations area of the online form.

Congratulations to our Faculty, Staff, and Students!

A&S Extraordinary Merit in Research
Debashis Dutta

Promoting Intellectual Engagement (PIE) Award
Patricia Goodson

A&S Extraordinary Merit in Teaching
John Hoberg

UW Employee for 1st Quarter
Shelley Straley

Mortar Board "Top Profs"
John Hoberg

Sharon Love Harrold Scholarship 2011-2012
Basant Giri

UW Outstanding Dissertation Award
Chen Liao

Outstanding Chemistry Undergraduate Teaching Assistant
Jared Christopherson and Travis Wells

Hans-Peter Richert Award
Benjamin Anderson

CHEM 5100
Topics: Inorganic Chemistry
Summer 2011

From Nanoscale Building Blocks to Functional Materials

PRESENTED BY DR. THOMAS E MALLOUK

On the nanoscale, new properties emerge in familiar inorganic materials. Some of these properties, such as increased reactivity, are a simple consequence of the high surface area of nanoparticles. Others, including the colors of semiconductor and metal nanoparticles are *mesoscopic,* meaning that they occur at a specific length scale that is determined by the underlying physics. These properties are a rich source of new discoveries that are now transitioning from the research laboratory to practical applications. We will begin the week with an overview of nanoscience and mesoscopic phenomena and will then discuss the assembly of nanoparticles into functional materials. The course will also cover specific applications of nanoscience in solar and electrochemical energy conversion, nano- and microscale robotics, and environmental remediation.

June 13-17, 2011, 11:00 am—12:00 pm, CR 310

This is a one week lecture series; students may receive 1 credit hour by enrolling in CHEM 5100, CRN 30163.

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☐ 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

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MAIL: Make a payment by mail.

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o **Yes**, UW is named in my will.

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

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