



SPRING 2014

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LETTER FROM THE DEPARTMENT HEAD

This was a good year for the chemistry department. Some of the ripples of budget problems of two years ago have disappeared and we weathered one of the strangest and shortest UW presidencies in my history at Wyoming. We're operating under new administrators and a new Dean of A&S who are inventing new processes that will benefit the university.

The new Enzi building will be finished in a year and we are scheduled to move in Fall 2015. This building is a 50 million dollar 60,000 square foot facility that will house lower division undergraduate laboratories in several disciplines. It will be equipped with all new equipment and a state-of-the-art teaching design. This new building will be located on the north side of Lewis Street at the corner of 10th and Lewis.

We had a successful search for a new inorganic chemist and we were able to hire our first choice, Elliott Hulley. Elliott will be joining us in July this summer and will start teaching this fall. We welcome Elliott, Abi, and their son Calvin.

I am also very happy to report that the promotion of Milan Balaz and Teresa Lehman to Associate Professor was very favorably received by the college and I anticipate that their promotion and tenure will be approved by the Board of Trustees prior to the next academic year. Milan's research interests are at the intersection of organic, supramolecular, and material chemistry with projects like porphyrin-DNA nanostructures for light harvesting and energy transfer; and enhanced circular dichroism detection of chiral biomolecules. Teresa's long-term theme is creating an understanding of the structure-function relationship for biologically relevant biopolymers such as metal-complexed antitumor antibiotics and selected anti-malaric peptides. Teresa was just awarded a \$391,000 R15 grant for her research with bleomycin.

The Department continues to bring in outstanding scientists from around the world for our speaker series. This summer we had Professor Peter Stair from Northwestern University. His research interests are in the synthesis, characterization, and physical properties of heterogeneous catalysts. His goal is to develop fundamental understanding in catalysis science that leads to advances in industrial chemistry and energy technology.



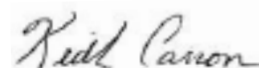
Peter and Joy hiking the Gap Lakes in the Snowy Range

This fall we had an excellent Hach lecture from Dr. Steve Lammert of Torion Technologies. Dr. Lammert spoke Fieldable Mass Spectrometers and gave a very entertaining lecture at our Hach luncheon about his adventures that led to developing the miniature mass-spectrometers.

We always welcome gifts from alumni and friends. During these tough budget times we rely more and more on gifts to keep the department moving forward. Your gifts go toward awards, awards luncheons, student travel funds, and helping students with financial needs. It is easy to help out at our website www.uwyo.edu/chemistry/giving.

You can keep abreast of chemistry department events by visiting our website at www.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. Continue to stay in touch and make us aware of your accomplishments!

Best Regards,



Keith Carron

PAULA M. LUTZ

UW Names New Dean of College of Arts and Sciences



A scholar in cell biology and neuroscience who has served as a dean at two universities has been named dean of the University of Wyoming College of Arts and Sciences.

Paula Lutz comes to UW from Montana State University, where she was dean of its College of Letters & Science for five years and was a professor of cell biology and neuroscience. She has succeeded the retiring B. Oliver Walter, who had led UW's College of Arts and Sciences since 1989.

"Dr. Lutz's record of accomplishments includes innovative teaching and curricular initiatives, programs to advance research and graduate education, diversity enhancement, faculty hiring and career development, budget management and strategic planning," says UW Provost Myron Allen. "In addition to her outstanding work on behalf of her faculty colleagues as dean, she has an exemplary teaching and research record of her own. We're delighted she's bringing that great depth of experience and talents to UW."

Paula began her work at UW in July, leading the college with the largest enrollment of UW's academic units, with bachelor's degree programs in 43 disciplines, 42 master's programs and 11 doctoral programs.

Paula completed a bachelor's degree in chemistry at the University of Missouri-Rolla (UMR) and received a Ph.D. in microbiology and immunology at Duke University. She did post-doctoral work at both Duke and the University of North Carolina-Chapel Hill before joining the faculty at UMR, now the Missouri University of Science and Technology.

In nearly two decades at UMR, Paula won more than a dozen outstanding teaching and faculty excellence awards. She became dean of the UMR College of Arts and Sciences in 2002, leaving in 2007 to become dean of the College of Letters & Science at Montana State. She has continued both teaching and research throughout her administrative career, including research into the effects of lead on children's immune systems.

ELLIOTT HULLEY



Elliott earned his B.S. in Chemistry from Ursinus College in Collegeville, PA, in 2005. He then began graduate studies at Cornell University in the laboratory of Peter T. Wolczanski studying the role of electronic structure on the reactivity of Group V siloxide complexes as well as first-row transition metal complexes bearing 2-aza-allyl ligands. During the course of these studies, he found that complex organic frameworks can be assembled rapidly from readily synthesized precursors, mediated largely by ligand-localized reactivity. After obtaining his Ph.D. in 2011, he began postdoctoral studies at Pacific Northwest National Laboratory in Richland, WA. As part of the Center for Molecular Electrocatalysis, he worked on the development of electrocatalysts for the oxidation of H_2 based on inexpensive metals that may one day replace current precious metal catalysts. Utilizing ligand systems that exploit secondary coordination sphere interactions, a new class of electrocatalysts was built on a manganese platform. At the University of Wyoming, he will focus on developing new transition metal catalysts to replace existing precious metal systems as well as facilitating new chemical transformations.

DAVID ANDERSON



The Anderson group continues to study the chemistry that occurs at liquid helium temperatures (-452 °F) in crystals of molecular hydrogen doped with reactive radical species. These fundamental studies test the limits of chemistry at extremely low temperatures.

Fredrick M. Mutunga joined the group in fall of 2012 and is currently preparing for his preliminary defense scheduled in March. Good luck Fred! This past summer was very productive for research: Fred quickly mastered the experimental techniques and Shelby E. Follett, an earlier arrival first-year student, helped as well. With the support of the Bill Gern in the research office, the Anderson group purchased new equipment to liquefy and recover helium used as a cryogen in our experiments. This is a big boost to our research effort and we are working to reach 100% recycle percentages by the end of this summer.

NAVAMONEY ARULSAMY



Research scientist Navamoney Arulsamy taught the Advanced Inorganic Chemistry course (CHEM 4100) in the Fall 2013 semester. This two credit hour laboratory course meets twice a week for three-hour periods.

Arulsamy modified the syllabus with two new experiments. One of them included the synthesis of a triboluminescent metal complex. Students were excited to observe dazzling light emanate when a crystalline substance was crushed. The other new experiment illustrated the application of IR and UV-Vis spectroscopy in the comparison of metal-oxygen bonds in a related series of compound. The students reviewed Arulsamy very positively for his teaching. Arulsamy also manages the Departmental X-ray, EPR and ESI-MS laboratories. 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 significant amount of research working on a project funded by the A & S College's Basic Research Grant. He is currently interested in the synthesis of cationic NO donors. Arulsamy performed a hydrogen balloon experiment for the Slade Elementary 5th graders and the flame test experiment for the Laramie Junior High 6th grade students.

MILAN BALAZ



The Balaz group continues to work on (i) modular DNA-templated supramolecular nanoassemblies, (ii) quantum dot nanocrystals for solar cells and chirophotonics, and (iii) chiroptical and fluorescence sensing of biomolecules (DNA, amino acids) and heavy metals. Four graduate students and three undergraduates work

currently in the group. Former group member Gevorg Sargsyan successfully defended his Ph.D. dissertation in December 2013, and he is currently working with Prof. S. Matile at the University of Geneva in Switzerland as a postdoctoral scientist. Prof. Matile is a leading expert in the field of supramolecular chemistry. Urice Tohgha (5th year Ph.D. student) is exploring the synthesis and structural, electronic and chiroptical properties of chiral ligand induced optically active quantum dots. He has co-authored two manuscripts in 2013 (ACS Nano and Chem. Commun). Urice is a NSF GK-12 EE Nanotechnology fellow and works with local WY high schools to incorporate nanotechnology into their STEM curriculum. Jung Kyu Choi (5th year Ph.D. student) and Levente Pap (1st year Ph.D. student) are working on the synthesis of asymmetric quantum dots as part of a collaborative research project supported by the DOE EPSCoR grant and directed by Prof. W. Wang in the Department of Physics and Astronomy. Jung has co-authored 4 publications over the last 12 months (Chem. Eur. J., J. Inorg. Biochem, ACS Nano, and Dalton Trans.). Shambhavi Tannir (1st year Ph.D. student) took over Gevorg's project on the chiral DNA-templated porphyrin nanoassemblies. She is supported by the Energy Graduate Assistantship. In addition to the ongoing research conducted by the graduate students, three undergraduate students are currently working with us. Samuel Bartko (group member since May 2013) studies the synthesis of chiral core-shell quantum dots. Sam won the Rebecca Raulins Undergraduate Research Prize and has been selected as one of twenty-one A&S College Outstanding Graduates. Sam has recently been accepted into Ph.D. programs at MIT and UW Madison. Yifan Hu (since August 2013) explores the synthesis and purification of porphyrin building blocks. Breiana Johnson (since August 2013) works under Jung's supervision on the fluorescence detection of toxic mercury(II) ions. For more information, please visit our always up-to-date group web site: www.uwyo.edu/milanbalaz

FRANCO BASILE



The last couple of years of research and teaching were highlighted by the graduation of several group members: Gwendoline Toh (Ph.D.), Sujit Kandar (Ph.D.), Tristan Kinde (Ph.D.), Jenna Milliken (M.S.) and Joanne Slatter (M.S.). There are now 6 group members in the group and include Mr. Chenglin Liu, Mr. Linag Lu, Miss Rong Zhou, Mr. Raj Mahat, and joined by two new group members Mr. Mitch Helling and Mr. Rudy Mignon. As always, our laboratory hosts many undergraduate students and these include Miss Jacqui Black, Mr. Lambert ("Nike") Kabwar, Mr. Bill Trebelcock and Mr. James Erdmann. Our research in Analytical Chemistry and Mass Spectrometry is currently focusing toward the analysis of proteins directly from tissues sections, the analysis of intact bacteria for clinical applications, the rapid preparation of biological samples for bio-medical research and development of new instrumentation for the analysis of complex mixtures of metabolites. Because our work is highly interdisciplinary, we have established many collaborations with laboratories at UW, LCCC, CSU, CDC-Ft. Collins, and Sigma-Aldrich in Laramie. Looking back, 2013 also marked my 10 year tenure at UW, and to celebrate, our group hiked to the top of Medicine Bow Peak in the Snowy Range, followed by many tasty burgers and beer by the lake. We are definitely looking forward to the next 10 years of exciting research.

CARLA BECKETT



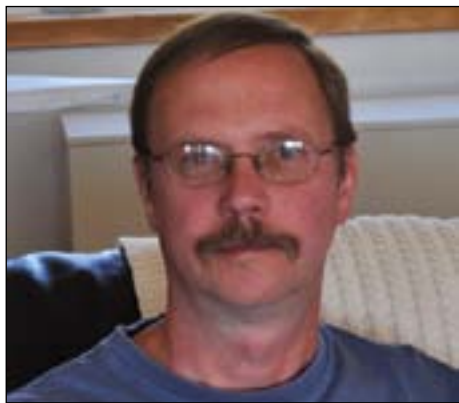
The fall semester kept me busy as usual again in 2013. The majority of the teaching assistant were new and that always keeps me on my toes. I taught General Chemistry II, CHEM 1030, in the fall. In addition, the laboratory portions of CHEM 1020 and CHEM 1030

kept me very busy trouble shooting and making sure all the experiments worked as smoothly as possible.

In the spring semester I am teaching General Chemistry I (CHEM 1020) and am looking forward to the change. I am also on the planning committee for the new Enzi STEM teaching building, which will house the

1000 and 2000 level chemistry courses. Construction began in January and I am looking forward to having new teaching labs for the freshman chemistry courses.

KEITH CARRON



The Carron group focused on our Dynamic Raman Scattering (DRS) method to study the interaction between nanoparticles. Brandon Scott, a third year student in our group, is

finishing up with a second paper on DRS with molecules that have varying affinities to cause aggregation. This Army funded project with former student Jason Guicheteau (Ph.D. 2003) is developing an understanding of the fundamental molecular properties that affect SERS.

We have continued our collaboration with Aaron Strickland (Ph.D. 2004) and his company iFyber. We won a two-year million dollar Army grant last year with ifyber and Rick Van Duyne at Northwestern University. I'm in my second year of the three-year term as Department Head. I was honored to win the Hurd Lecture Award at Northwestern University this year. I presented three lectures on the history of hand-held Raman systems and commercialization of SERS. I also traveled quite a bit with hikes across the Cotswold in England and a trip to Switzerland just before Christmas. Here is a view of the Limmat as it flows in the Lake Zurich and a photo from Chicago with my old friend Stuart Farqharson.



ED CLENNAN



Ed Clennan's research group currently consists of three graduate students, Xiaoping Zhang, Mohammad Assiri, and Thomas Bakupog and one undergraduate Juliet Kiyai. The group is working on the synthesis, photophysical and electrochemical characterizations of pyrylogens and viologens. The ultimate goal is to produce

new materials with useful electronic and redox properties. More detail can be found in a paper we published this year in Photochemistry and Photobiology (DOI: 10.1111/php.12174) that was dedicated to the memory of Professor Nicholas Turro and in our new website (<http://www.uwo.edu/clennan-chemis/>). We are grateful again this year for the support of all of our work by the National Science Foundation.

During 2013 Ed attended his first two meetings of the Petroleum Research Foundation Advisory Board in San Diego and in Baltimore. He also continues to serve as Editor in Chief of the Journal of Sulfur Chemistry (<http://www.tandfonline.com/toc/gsrp20/current#.UnhqySkC8U>). Finally, he gave invited lectures at the University of Minnesota and the University of Saint Thomas and presented a poster at the 246th American Chemical Society National Meeting in Indianapolis.

Congratulations

to Ed on the 2014

GEORGE DUKE HUMPHREY DISTINGUISHED FACULTY

Award!

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BRIDGET DECKER



Bridget Decker has transitioned from part time to full time teaching in the Chemistry Department. In the fall semester that included teaching close to 400 students General Chemistry I (CHEM1020) and supervising fourteen Teaching Assistants. During

that time she also worked with STEM and Education faculty on a grant application to support students in STEM fields pursuing their teaching accreditation. The \$1.2 million, five-year NSF grant was awarded and scholarship applications from STEM students are now being accepted.

In addition to teaching General Chemistry II (CHEM 1030) again this Spring, Bridget has also added another class to her repertoire Environmental Chemistry (bringing the total number of different classes/topics she has taught to twelve). Teaching the new class has been exciting (if a bit exhausting), especially since it is a subject with so many examples in our state of Wyoming. Bridget plans to spend her summer teaching one on-line course and getting back in the lab to try to purify and identify the proteins that allow *Toxoplasma gondii* to evade the immune system. Of course there will also be time spent playing outside with her son, dogs and husband, Jason Gigley (when she can drag him out of his Molecular Biology lab).

DEBASHIS DUTTA



The Dutta research group at this point comprises two graduate students, Ling Xia, and Ravi Peesara after 3 of it's member successfully defended their dissertations in the past 12 months. Ling is continuing her work on the design of micro- and nanoscale separations using a combination of electrically-

and pressure-driven flows while Ravi is making strides towards developing highly sensitive immunoassays for early detection of the Alzheimer's disease. The Dutta group members published 5 articles over the past year in the journals Analytical Chemistry, Analytica Chimica Acta, Journal of Chromatography A and Chemical Engineering Science. In addition, Ling presented her research at the Microscale Bioseparations conference in March 2013 and Basant (one of the graduating students) gave a couple of talks at the National

ACS meeting in Indianapolis. Also, Prof. Dutta presented some of his group research at the SWAP meeting in Fort Collins early last year. Research work in the Dutta group is currently funded by the National Science Foundation.

PATRICIA GOODSON



This academic year, my teaching responsibilities were focused on general chemistry (CHEM 1020) and organic chemistry (CHEM 2420) during both the fall and spring semesters. For several years we have been using an online graded homework system in our general chemistry classes to supplement exercises from the textbook. Students are able to get instant feedback on their answers rather than having to wait several days for the assignments

to be graded manually. This past fall semester we adopted a new organic textbook and a similar graded online homework system for the organic classes. Because of an embedded drawing program, its implementation has been a bit more challenging. Based on conversations with just a few students, the system was well received (by this limited sample of the class). Very few students, however, commented on the system in the written evaluations.

On a more personal note, I will be making a road trip to Arizona for Spring Break this year (with my husband Dean and our dog Sarah in tow) to visit our friends and former colleagues Bev Sullivan, Dan Buttry, and Kathie Cuomo.

JOHN HOBERG



The Hoberg group research continues to involve a mixture of organic synthesis and coordination chemistry to produce metal catalysts for the splitting of water using solar energy and light-driven metal catalysis. Alyssa Pearson initiated this work and received her PhD in December of last year.

Funding for her was provided by the School of Energy Resources in the form of a GA and from the SER - CPAC. An NSF fellowship also allowed us to collaborate with faculty at Victoria University in New Zealand on this project. Two new students joined the group in 2013 and are working on aspects of this chemistry. Melissa Gelwicks, a graduate of UW, and Amanda Landis, undergrad from Greenville College, are both pursuing their Ph.D.s.

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.

BRIAN LEONARD



The Leonard research group currently consists of 4 graduate students including Yagya Regmi, Cheng Wan, Samantha Schmuecker, and Jimmy Thode. Jimmy is a 1st year grad student who joined our lab last summer prior to enrolling as a graduate student. He is currently working on depositing Pd on metal carbide materials and studying their

catalytic properties. Yagya continues to work on bimetallic carbide compounds and recently submitted a paper on their synthesis. He has also begun testing these compounds as catalysts for fuel cell reactions. Cheng published a paper this year about the synthesis of 4 phases of molybdenum carbide and has submitted a second paper about their ability to split water into hydrogen and oxygen. He also received a SER graduate fellowship to fund his work for the coming year. Samantha is continuing her research on the nuts and bolts of our salt flux synthesis. She has discovered how the reaction proceeds and is traveling to Dallas in March to present her findings at the national ACS meeting. Dr. Leonard will also be attending the meeting to present finding from the rest of the group. Undergraduate Jack Stacy will be graduating this spring and is preparing to take the MCAT and apply to medical school. Kyle Duffee the other current undergraduate is still busy at work in the Leonard lab preparing Pt coated nanocarbitides for catalysis. Dr Leonard is keeping busy writing manuscripts and grants, and was awarded the American Chemical Society Petroleum Research Fund award last year.

BRUCE PARKINSON



The Parkinson group, along with the School of Energy Resources is proud to offer the services of a brand-new HRTEM Facility in 2013!

The HRTEM Facility houses the FEI Tecnai G2 F20 STEM, an electron microscope capable up 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.

DEAN RODDICK



The Roddick group currently has five graduate students and three undergraduates working in our lab. Both Justin Spott (M.S.) and Thomas Parson (Ph.D.) defended their degrees this past December; Justin is now working with the Laramie division of Sci Aps, Inc., previously known as Delta Nu, doing extensive international traveling for

user support. Thom has moved to Connecticut to be near his fiancé and is currently looking for employment.

This is the year of milestone symposia for me to attend: At the Fall National ACS meeting in San Francisco in August, I am participating in a symposium in honor of my Ph.D. advisor John E. Bercaw's 70th birthday and official retirement from the faculty at Caltech. At the same time there is also a celebration for my postdoctoral advisor, T. Don Tilley (UC Berkeley) on the occasion of his 60th birthday. Both of these events will have special journal issues associated with them, which we will contribute papers.

KRISZTINA VARGA



The Varga group utilizes biophysical methods to elucidate protein structure and function. We study how antifreeze proteins promote ice-growth inhibition at the molecular level and enable organisms to survive in extreme cold climates. We are also

investigating applications of antifreeze proteins in cryopreservation procedures of live cells. Another project focuses on the structural-functional characterization of TSPO, a mitochondrial membrane protein. TSPO an important drug target in neurodegeneration, cancer, and cardiovascular disease.

Currently there are three graduate students and two undergraduates in the Varga group. Nora Susanti is a Master's student supported by the Fulbright Fellowship. Korth Wade Elliott is supported by a GK-12 Fellowship from NSF. Joshua Sharpe is an undergraduate supported by the INBRE Transition Scholarship. He was

awarded the Best Poster Presentation Award at the Third Biennial Western Regional IDeA Scientific Conference.

I am serving as a mentor for the Central High School (Cheyenne, WY) students participating in the SMART (Student Modeling a Research Topic) team program. In June 2013, I was invited to join the Educational Testing Service (ETS) Development Committee for the Graduate Record Examination (GRE): Biochemistry, Cell and Molecular Biology Test for a two-year term.

Biological chemistry is one of the major areas of chemistry, and the development of a strong Biological Chemistry division will attract new students to the department. I developed a new Biological Chemistry course (CHEM 5400/4400), which was one of the first steps in this direction, and it became one of the core courses of the chemistry graduate curriculum. Biological Chemistry Cumulative Examinations are now also offered. I would like to initiate an annual endowed Biological Chemistry Lecture Series, and I am currently seeking funding for it.

JING ZHOU



Jing Zhou's group continues the research effort on the growth of doped ceria thin films and the understanding of structure-reactivity relationships of ceria-supported Ni and Au nanoparticles. The group welcomed Erik Peterson as a new graduate student this spring. The group said good bye to Shanwei Hu last May. He returned back to University of Science and Technology of China upon completion of

one-year Ph.D. research experience. Elfrida Ginting is in her 4th year of the Ph.D. program. In 2013, Shanwei and Elfrida investigated the interaction between ceria thin films and Mn dopant. The results were published in Applied Surface Science. Elfrida further reported the study on morphology and electronic properties of Ni nanoparticles supported on Mn-doped ceria at the Rocky Mountain AVS meeting. Erik's undergraduate research last year was fruitful involving learning to operate lab instrument, fixing broken vacuum components, setting up a STM etching station in addition to hands-on research experience. He will present a poster on the growth and sintering of Ni particles supported on Ti-doped ceria at the upcoming 247th ACS meeting. Jing gave an invited talk at the 246th ACS meeting and submitted an invited paper to Catalysis Today. The group is thankful for the financial support from NSF.

In Memory of Edgar B. Smith

Edgar B. Smith 87, Laramie, died Monday, April 1, 2013, at the Medical Center of the Rockies in Loveland, Colo., following a short illness.

He was born in Tulsa, Okla., and during high school, the family moved to Lovell, where he graduated from high school.

Following high school, he enlisted in the U.S. Army and served in the Philippines during WWII until his honorable discharge in 1946. As a member of the Army Reserves, he rose to the rank of captain and also served for eight years in the Wyoming National Guard.

Following his discharge from the Army, he attended the University of Wyoming, graduating in 1951 with a B.S. in chemistry with honors. More importantly in 1951, he met and married the compass and love of his life, Peggy, with whom he raised a family of five children and was married 62 years.

In his younger days, he was an accomplished tennis player and jazz/classical pianist.

His love of music, as well as his love of outdoor activities including fishing, hunting, and camping, were passed on to his family. He loved gardening and was also an expert on wild mushrooms and frequently gathered them in the mountains with his family. His career began initially in Laramie where he rose to the position of assistant state chemist. During the Korean conflict, as a member of the reserves, he was assigned to work on jet fuel research at the Rocky Mountain Arsenal in Denver, where he moved his family.

In 1957, he and the family returned to Laramie where he worked at the Bureau of Mines doing oil shale and coal research. When the Bureau became the Western Research Institute, he continued his work there and retired in 1989 as head of the Chemical Kinetics Division.

During his life, he was active in the Laramie Lions Club, the Masonic Lodge and St. Matthew's Cathedral. He was preceded in death by his parents; a daughter Emily; and a brother.

He is survived by his wife, Peggy Smith, of Laramie; two sons, Mark (Laurie) Smith, of Tucson, Ariz., and Hugh (Gigi Smith of Bakersfield, Calif.; two daughters, Laura Smith, of Cheyenne and Diane Sims, of Evanston.

He is also survived by four grandsons, Connor Smith, Nicholas Smith, Gregory Smith and Shane Sims.

1st Annual Edgar B. Smith Scholarship



Pictured from left to right: Keith Carron, Kyle Duffee, Peggy Smith, and Janet Constantinides

DEPARTMENT OF CHEMISTRY AWARDS

The following students were acknowledged at our
Annual Undergraduate Awards Luncheon on
Wednesday, April 2, 2014

CRC Press Freshman Chemistry Achievement Award

Michelle Gess

2014 Undergraduate Award in Analytical Chemistry

William Trebelock

2014 Undergraduate Award in Inorganic Chemistry

Kyle Duffee

Board of Visitors Student Service Award

John Stacy

Outstanding Freshman Award

Hunter Doyle

Outstanding Sophomore Award

Jessica Hunt

Outstanding Junior Award

Joshua Henry

Jonathan Cauffman

Outstanding Senior Award

Chris Nordyke

Howard H. Heady Scholarship in Chemistry

Rachel Winden

Walter F. and Barry D. Gasdek Scholarship

Claire Korpela

Arthur Gray Janssen Award

Sierra Jech

Asplund Academic Excellence Prize

Drew Newman

Asplund Undergraduate Research Prize

John Stacy

Raulins Undergraduate Research Prize

Sam Bartko

Edgar Bailey Smith Chemistry Scholarship

Kyle Duffee

Clifford C. Hach Memorial Scholarship

Jacob Williams

Sam True



EXTERNAL AWARDS

UW International Undergraduate Student Award for Excellence in Internationalization

Jose Cabrera Rodas

Academic and Cultural Experience at Shanghai Normal University

Drew Newman



SUPERIOR STUDENT AWARDS

Samuel G. Bartko

Jose A. Cabrera Rodas

Kimberley A. Caywood

Hunter L. Doyle

Kyle D. Duffee

Erin M. Fulton

Michelle R. Gess

Joseph C. Graves

Wilarachchige Gunatilleke

Joshua A. Henry

Yifan Hu

Jessica F. Hunt

Matthew J. Hurlock

Johathan A. Kephart

Claire J. Korpela

Pinya Lin

Kenny E. Madsen

Elayna M. Mahone

Kyle L. Meyers

Jennifer A. Morkemo

Drew C. Newman

Christopher T. Nordyke

Rachael N. Piver

Jencee E. Reardon

Jacob T. Schmied

Tyler D. Schriber

Larissa M. Siirila

John M. Stacy

Benjamin A. Staldine

Rachael E. Winden

Emily Woodard



Local ACS Student Club Wins Award

The undergraduate student chapter of the American Chemical Society received special recognition from the national ACS on the basis of their outreach programs and activities. They were one of 125 student chapters to receive this award. The club regularly visit K-12 schools and UW events for chemistry demonstrations and chemistry awareness. Congratulations!

2014 GEORGE DUKE HUMPHREY DISTINGUISHED FACULTY



A longtime University of Wyoming professor who has mentored dozens of graduate students, maintained a long-running research program and gained international distinction in the field of physical organic chemistry has received UW's highest faculty honor.

Edward Clennan is the winner of the 2014 George Duke Humphrey Distinguished Faculty Award, named for UW's 13th president.

"Ed will go down as one of the most productive and valuable faculty that the Department of Chemistry has ever had," wrote his colleague, chemistry Professor Dean Roddick. "I don't think anyone else currently on campus has a comparable complete record of accomplishment."

Clennan has been a member of the UW Department of Chemistry faculty since 1979, gaining stature internationally in his study of photochemical- and electrochemical-initiated introduction of oxygen into organic substrates. His

work has focused on development of new light-absorbing molecules designed to inhibit energy-wasting processes that diminish the efficiency of conversion of light energy into new materials.

Clennan's research has drawn 30 years of continuous funding from the National Science Foundation, totaling more than \$8 million.

"As a former director of the Chemistry Division at the National Science Foundation, I can confidently say that this provides resounding confirmation of the quality of Ed's research program by his peers," wrote Luis Echegoyen, professor at the University of Texas-El Paso.

Clennan also has written 126 peer-reviewed papers and book chapters during his career, and he has instructed 46 undergraduates, 14 Ph.D. students, seven master's degree students and 14 post-doctoral associates in his research laboratory.

"Ed really shines in graduate education, particularly in his careful and meticulous mentoring of students," Roddick wrote. "I have always been impressed with how well prepared his students are. Walking past his office, a typical scene is Ed sitting at his small table with a student working over their projects, talking very softly and intently to them. He truly cares about his students and really works hard with them."

Students in his spring 2013 organic chemistry class attested to his value as a teacher.

"Dr. Clennan has been a great instructor," one student wrote in his course evaluation. "He goes above and beyond to help his students and make sure we understand the material, and he never seemed to grow impatient with us."

Wrote another: "Dr. Clennan was a blast to have as a professor. The passion that he possesses for chemistry and science is amazing. He made a hard subject so much more enjoyable than it could have been."

Clennan has twice been head of his department, from 1996-1999 and from 2005-2012, and has served on numerous committees at the departmental, college and university level. "Ed's service contributions to the University of Wyoming are exemplary," wrote Keith Carron, current head of the Department of Chemistry.

Clennan received his bachelor's degree in chemistry and mathematics from the University of Wisconsin-River Falls in 1973, then earned his Ph.D. in organic chemistry from the University of Wisconsin-Madison in 1977. He did post-doctoral work at Texas Christian University before starting his career at UW.

ALUMNI NEWS

- § **Courtney Vowell**, M.S. 2009, Over the past six months Courtney quit her job in Pittsburgh, moved to Memphis, got married, and got a job as a Compound Management Assistant in the Chemical Biology and Therapeutics Department at St. Jude Children's Research Hospital. (Her husband, Jared Hammill, landed a position as a post-doc in the CBT at St. Jude, which was the reason for the move to Memphis). She also got a dog (Paxton).
- § **Shannon White**, Ph.D. 2000, Shannon will be celebrating her 10 year anniversary working at Aspen Aerogels (in the Boston Area) this April. She is currently managing two large government contracts (~\$3M each), as well as a few smaller Phase II programs. One of the programs is developing an aerogel for CO₂ capture. Over the past year her and her husband Kevin (Buttry Ph.D, 2000) have been working with a builder to build their dream home and they hope to be moved in by March. Other than that their daughter keeps them very busy.
- § **Richard Merwin**, Ph.D. 1994, Rich is still living in Chicago, working for Stepan Company as a Sr. Research Chemist for their Agricultural Products. He and his wife Nadine bought a small house on the north side of Chicago and are in the process of remodeling it. Nadine is teaching at the Lycee Francais de Chicago. They are getting to know their way around the area and have survived, so far, one of the snowiest and coldest winters Chicago has to offer. Rich and Nadine spent two weeks over Christmas at their winter home in Phoenix and plan on spending a week there in April to take the Chicago chill off. A trip to France is planned this summer to visit family.
- § **Erik Kalberer**, Ph.D. 2004, Eric joined Lubrizol (a fortune 500 specialty chemicals company, located in Cleveland, Ohio) as a Program Manager in the Engine Oils business in 2012, and is responsible for product and platform development as well as customer technical support. In other news, Eric and his wife Lindsay are expecting a baby boy this July.
- § **Carrie McCarthy**, B.S. 2013, joined the chemistry graduate program at the University of Southern California in the Fall of 2013, and has received a National Science Foundation Graduate Fellowship. She has joined Dr. Richard Brutchey's group and is doing research on solid state dye-sensitized solar cells. She is enjoying sunny LA and is also learning how to surf.
- § **Megan Maurer**, B.S. 2004/M.S. 2005, recently left her position at Monsanto in Kannapolis, NC, to pursue a Ph.D. in Analytical Chemistry at West Virginia University. She will start proteomic and metabolomic research this summer in Stephen Valentine's lab. Megan's grandfather, John Maurer (department head 1977-80), couldn't be more proud!
- § **Nicholas Hauser**, Ph.D., I have been with Sigma-Aldrich RTC in Laramie since May 2008 and am currently the Operations Manager. The Sigma-Aldrich site in Laramie specializes in producing analytical standards for the Pharmaceutical and Environmental industries. I work with the Quality Assurance, Quality Control, Production, Environmental Health and Safety, and Customer Service groups within the site to ensure that the process flows are effective and efficient in order to meet aggressive corporate goals. I also work with Sigma-Aldrich's global Sales team to develop new customer relationships as well as to help drive our new product program to continue to grow our portfolio. I've been married to Nicole (LeBeau) since November 2006 and have 2 daughters, Alexa (5 years old) and Blaire (3 years old).
- § **Jenna Milliken**, M.S. 2013, I've been working at Tiorco here in Denver for 8 months. I'm helping design surfactant formulations for enhanced oil recovery (EOR) projects for reservoirs all over the world. Also, I do some analytical work quantifying surfactants from core flood experiment effluents on HPLC-CAD and HPLC-ELSD. My husband, Eric, and I celebrated our graduations last summer by relaxing in the Virgin Islands. So far, we like Denver and absolutely love skiing whenever we can.



We look forward to hearing from you.

Please let us know what you are up to

email: chemistry@uwyo.edu

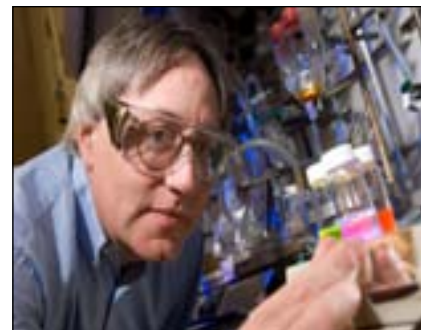
CHEM 5300

Topics: Organic Chemistry

Summer 2014, August 5-8*

An Introduction to Second- and Third-Order Nonlinear Optics

PRESENTED BY DR. SETH R. MARDER, Georgia Institute of Technology



Seth Marder is currently the Georgia Power Chair of Energy Efficiency and Regents' Professor of Chemistry and Professor of Materials Science and Engineering (courtesy) at the Georgia Institute of Technology. He has published over 350 peer reviewed papers and has edited several proceedings and books including two Special Volumes of *Advances in Polymer Science: Photoresponsive Polymers*. Among his recognitions and awards, Dr. Marder was the 1993 recipient of JPL's Lew Allen Award for outstanding research by a scientist in the early part of his career, a recipient of an NSF Special Creativity Award, the ACS Arthur C. Cope Scholar Award, and Georgia Tech's Outstanding Faculty Research Author Award. He is a Fellow of the American Association for the Advancement of Science, the Optical Society of America, SPIE, the Royal Society of Chemistry the American Physical Society and was elected Fellow of the Materials Research Society in 2014. Among his advisory roles he was the chair of the Materials and Chemistry Subcommittee of the Department of Commerce's Emerging Technologies and Research Advisory Committee. He holds over 25 patents, many of which have been licensed and form the basis for three start-up companies he co-founded, two of which have been sold to a Fortune 500 Company. He has served on various Editorial Boards for scientific publications including *Science*, *Chemical Communications*, *Chemistry of Materials*, *Journal of Materials Chemistry*, *Advanced Functional Materials*, and most recently as the Founding Chair of the Editorial Board for the Royal Society of Chemistry's new flagship materials journal, *Materials Horizons*. His research interests are in the development of materials for nonlinear optics, applications of organic dyes for photonic, display, electronic and medical applications, and organometallic chemistry. He can be reached by e-mail at seth.marder@chemistry.gatech.edu or see <http://www.marder.gatech.edu/>.

*Tuesday, August 5th, 10:00-11:00 am

*Wednesday, August 6th, 10:00-11:00 am

*Thursday, August 7th, 10:00-11:00 am

*Friday, August 8th, 10:00-11:00 am

CR 302

This is four days only; students may receive 1 credit hour by enrolling in CHEM 5300, CRN 30165

An Introduction to Second- and Third-Order Nonlinear Optics

This series of lectures is designed to provide a general audience with a basic introduction to second- and third-order nonlinear optical processes, materials and applications. The lectures assume a basic knowledge of organic chemistry and undergraduate physics. For organic chemistry students, it could be useful to re-familiarize yourself with basic concepts of polarization, polarizability, dielectric constant and refractive index. I will provide some notes and papers, which could assist you in this regard, and also suggested that you explore the Photonics WIKI, created by the Center for Materials and Devices for Information Technology Research. The website for this can be found at the following address: http://photonicswiki.org/index.php?title=Main_Page. Within this WIKI there are sections on polarizability, and a variety of nonlinear optical processes, that are largely based on course notes I have developed for graduate courses taught at Georgia Tech.

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