UNIVERSITY OF WYOMING
DEPARTMENT OF CHEMISTRY

SPRING 2015

CHEMISTRY NEWS

COLLEGE OF ARTS & SCIENCES
Department of CHEMISTRY
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UWYO.EDU/CHEMISTRY

LETTER FROM THE DEPARTMENT HEAD

The department had another great year with changes as the department meets the goals of University Studies, major research grants were won, the new Enzi STEM building will be completed this summer, and we became a leading member of the Executive Task Force for the Science Initiative.

The new Enzi building will be finished this summer and we plan to be teaching in the new building this fall (2015). This building is a $50M - 60,000 square foot facility that will house lower division undergraduate laboratories in several disciplines. We are equipping the building with two new NMR spectrometers, ICP spectrometers, and other pieces of new equipment.

Doug Wheeler retired this year after many years of service as our NMR Manager. Doug is still in Laramie; I saw Doug and Madeline yesterday at graduation with their son George; now a graduate of UW. We had a successful search for a new NMR manager. The new manager is Alexander Goroncy (featured later).

Last summer I was invited to a meeting of a group of department heads from botany, zoology, physics, and molecular biology. That was the first meeting of the Science Initiative Task Force. We planned and received approval for an initiative to create a new science facility at UW to house all of these disciplines and to introduce active learning as a method for teaching the sciences. Dean Roddick joined me to create a vision for chemistry and to present that vision to the Wyoming Legislature. With amazing speed, the task force was able to convince the legislature to make the first installment of $30M to begin the planning of the building and to begin the infrastructure for the new science facility. It is very exciting to choose the architects and to see the development of an undergraduate research fund, seed funding for new faculty, and a centralized core facility for new equipment. Our goal is to make UW sciences move into the top quartile of research universities.

Continued on Page 2

Our named lecture series continued with several great speakers. The year's Sara Jane Rhoads and Rebecca Raulins lecturer was Jeffrey S. Moore, a professor of chemistry at the University of Illinois at Urbana-Champaign. Professor Moore is a renowned chemist in the field of Polymer Chemistry and discussed his recent exciting results in the area of polymer mechanochemistry and self-healing materials. Our Clifford A. Hach lecturer was Professor Rich Dluhy from the University of Georgia. Rich is a renowned infrared and Raman spectroscopist. He entertained us with a lunchtime seminar on bad science and the antivaccine movement and then spoke about new methods for direct detection of pathogens with SERS. This year's Coates Memorial Lecturer was Professor Robert Crabtree. Professor Crabtree is a world renown scientist and is current the Whitehead Professor of Chemistry at Yale University. Professor Crabtree lectured on homogeneous catalysis for solar fuel storage.

I fulfilled (survived) my three year term as department head and officially retired from UW after graduation this year. The department has a great faculty and staff. It was an honor and a pleasure to work with them. Professor David Anderson has accepted the position of the next department head. I'm sure Dave will do a great job.

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 http://www.uwyo.edu/chemistry/giving.html

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

Best Regards,

Keith Carron

Keith Carron

ALEXANDER GORONCY

Alexander studied physics and chemistry in Germany (Bremen, Göttingen) and in the USA (University of South Carolina, Columbia) and has worked at the Albert Einstein College of Medicine and Ohio State University. Areas of research included solid-state physics, medical physics, biophysics, metalloproteins, history of physics, philosophy. He spent several years in Japan at the NMR Park (40 NMR spectrometers) of the RIKEN-Yokohama Institute on the structure determination of proteins. In New Zealand, at Massey University and at the Riddet Institute, he mainly worked on applications of NMR and spectrometry to food and nutrition, identification of bioactive compounds, food digestion, enzyme kinetics, RNA-protein interactions of viruses. At the University of Canterbury, Christchurch (New Zealand), he managed the NMR, ESI-Mass Spectrometry (MS), and HPLC facilities, and studied antarctic algae. His main research interests are in spectroscopy and spectrometry (NMR, EPR, MS). Alexander enjoys cycling, hiking, history, and playing the harpsichord.

DAVID ANDERSON

The Anderson group studies the chemistry that occurs at liquid helium temperatures (-452 °F) in crystals of molecular hydrogen doped with hydrogen atoms (reactive species) and other molecules. These studies test the limits of chemistry at extremely low temperatures. Graduate student Fredrick M. Mutunga is now in his third year. Fred spent a lot of time this year getting MESMER code running to predict rates constants for reactions we are studying at very low temperatures. In early 2014 Morgan Balabanoff joined the group as well and will hunker down this summer to get some data for her preliminary defense this fall. We were fortunate to get our NSF grant renewed this summer, so we are all ready for a productive research year.

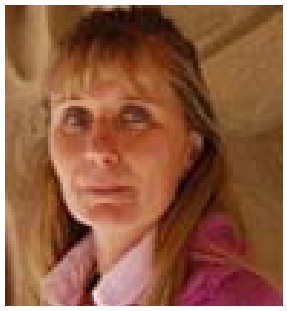
NAVAMONEY ARULSAMY

Research Scientist Arulsamy received a Faculty Research Initiative grant from the Wyoming NASA Space Grant Consortium. The project is aimed at the synthesis and thermal decomposition studies of Lightweight Propellants. Four undergraduate students worked with him on the project throughout the year and obtained significant results. Arulsamy is also working on another project on the synthesis of ruthenium photocatalysts. Arulsamy manages the Departmental Instrumentation: the Bruker APEX2 X-ray diffractometer, the Bruker EMX EPR Spectrometer and the Thermo LCQ ESI-MS Spectrometer. He trained and assisted students and researchers in the operation of the instruments. Arulsamy taught the advanced inorganic chemistry laboratory course (CHEM4100) in the fall semester. He enjoys teaching this course and is very satisfied with his contribution in teaching synthetic and characterization techniques to undergraduate students. Arulsamy continues to visit Slade Elementary to do a chemistry demonstration to illustrate the 1936 Hindenburg Airship disaster. The students thoroughly enjoyed the bursting of hydrogen balloons. Arulsamy makes it a point to talk about gases and also to highlight how lucky we are to be one of very few states to have a number of helium mines.

FRANCO BASILE

There are now 6 graduate students in the group and include Mr. Chenglin Liu, Mr. Liang Lu, Miss Rong Zhou, Mr. Mitch Helling, Mr. Rudy Mignon and our new member, Mr. Tony Maus. In December 2014 Mr. Raj Mahat successfully defended his Ph.D. dissertation and is now working at Sinclair, WY. We continue to conduct research in Analytical Chemistry and Mass Spectrometry with a focus toward the rapid analysis of proteins, the analysis of intact bacteria for clinical applications, and the development of new instrumentation for the analysis of complex mixtures of metabolites. The highlight for 2014-15 was the funding of a NSF-Major Research Instrumentation grant ($500,000) to acquire a MALDI-ToF/ToF-MS instrument capable of accurate mass and proteomic measurements.

CARLA BECKETT



The fall semester kept me busy as usual again in 2014. Supervising the general chemistry teaching assistants (most of whom are new) always keeps me hopping. I taught General Chemistry II, CHEM 1030, in the fall.

In addition, the laboratory portions of CHEM 1000, 1020, 1030, and 1050 kept me very busy trouble shooting and making sure all the experiments worked as smoothly as possible. Approximately 850 students pass through the freshman labs each week.

In the spring semester I am teaching General Chemistry I (CHEM 1020) and again am in charge of the teaching assistants and freshman labs. I am also on the planning committee for the new Enzi STEM teaching building, which will house the 1000 and 2000 level chemistry courses. The building is scheduled to be completed this summer and we will move in before the fall semester.

KEITH CARRON

The Carron group continued to focus on studying Dynamic Raman Scattering. Our group consisted of Brandon Scott and Jacob Williams.

Brandon Scott (2015) finished his PhD this spring and is moving on to a post-doc with the Zeigler group at Boston University. Brandon will be working on a portable method for identifying material and pathogens in body fluids with Raman microscopy. Brandon finished a nice dissertation with his studies of lab-on-a-bubble and then our work exploring statistical variations in nanoparticles solutions. We're finishing up a paper on site-selective methods to look at molecules in gaps between nanoparticles.

Jacob Williams (Chemistry/Chemical Engineering) worked with me last summer and continued this spring. Jacob has been researching methods to teach Raman spectroscopy and has developed many new labs for students and professors to follow. Jacob has written a manuscript for the Journal of Chemical Education that we plan to submit this summer. Jacob will continue working with me this summer to develop a library of herbal medicines to develop a GMP method for the herbal medicine farm business.

Last year was again a year of travel for me. Several trips to England, Switzerland, and Germany. We hiked the coast of Cornwall and the Swiss countryside. I finished my term as Department Head and decided that it was time to retire from UW. I will continue on as Professor Emeritus and will continue as CEO of my company, Snowy Range Instruments – Not exactly retirement.

ED CLENNAN

The Clennan research group currently consists of three graduate students, Xiaoping Zhang, Thomas Bakupog, and Jacob Weber, and one undergraduate student Rachael Weber. The group research effort has evolved significantly over the years and we are no longer involved in singlet oxygen chemistry. Instead, we are currently focused on the design, and study of properties, of novel new polyaromatic viologens and hydrocarbons. These are fascinating and beautiful molecules that have a myriad of practical uses. Our first published contribution to this area appeared in Organic Letters in 2014 (DOI: 10.1021/ol1502180y). This work is supported by the National Science Foundation and was presented during the 2014-2015 academic year in 4 peer-reviewed manuscripts, in two presentations at the Spring ACS meeting in Denver, and in an invited seminar at the University of Southern Mississippi. Ed continues to be a member of the Petroleum Research Foundation (PRF) Advisory Board, a member of the Editorial Board of the Journal of Physical Organic Chemistry, and as Editor of the Journal of Sulfur Chemistry. During the past academic year his role as editor took him to a publisher meeting in London and to a Sulfur Chemistry meeting in Istanbul Turkey. He also attended PRF Advisory Board Meetings in Clearwater Beach Florida and in San Francisco California.

BRIDGET DECKER

Bridget Decker has been busy teaching in the classroom and laboratory. The past academic year included teaching Environmental Chemistry and General Chemistry courses. She has also been working with multipleundergraduates on a research project that aims to identify and characterize Toxoplasma gondii proteins that manipulate host membrane fusion events. The project, a collaboration with Jason Gigley (Assistant Professor of Molecular Biology), is funded by a President's Interdisciplinary Award. In addition to research experience students have also gained class credit and an INBRE Fellowship. She also continues to work with other STEM and Education faculty on the NSF-funded project to recruit STEM majors into K-12 teaching.

DEBASHIS DUTTA

The Dutta research group currently has two members, Ling Xia, and Ravi Peesara. 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 4 articles over the past year in the journals Analytical Chemistry, Biomedical Microdevices, Journal of Chemical Education, and Journal of Chromatography A. In addition, Ling presented her research at the HPLC conference in May 2014 and Ravi gave a talk at the National ACS meeting in San Francisco. Research work in the Dutta group is currently funded through grants from the National Science Foundation and the National Institutes of Health.

PATRICIA GOODSON

This academic year, my teaching responsibilities have focused on general chemistry (CHEM 1020 and 1030). While it has been a busy semester adapting course materials to a new textbook, I am really enjoying teaching general chemistry II, since it had been about 6 years since I last had the opportunity to cover those topics. Recently, I was excited to learn that I had been selected to receive a "Promoting Intellectual Engagement in the First Year (PIE)" award here at UW. Nominees for this award are chosen by freshmen and sophomore students in an online survey and a committee then selects recipients based on number of nominations and the student comments.

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.Dr. Alyssa Webster (PhD - December 2014) initiated and published our preliminary results in Dalton this year. Melissa Gelwicks and Amanda Landis, who are both pursuing their PhDs in the Hoberg Group, are continuing with this area of research.

~~Dr. Hoberg, along with Dr. Brian~~ Leonard, received funding for an REU (Research Experience for Undergraduates) summer program from NSF. The grant focuses on bringing Wyoming Community College students to UW for a 10-week summer research experience. The program will run from 2015 through 2017. Dr. Hoberg also received funding from the A&S College to develop an Educational Database for Chemical Spectroscopy. This entails the development and hosting of a web-based database for solving chemical structures.

JAN KUBELKA

Research in Jan Kubelka's group focuses on some of the fundamental problems in modern biophysics, such as understanding how proteins fold, unfold and aggregate. We also study how certain chemical modifications of short peptides can turn them into potent, but otherwise non-toxic antibacterial and antitumor agents. On the more fundamental side, we are researching the experimental tools and methods, mainly centered on vibrational spectroscopy, so that it can be better utilized for gaining new, more detailed and accurate information about biomolecular properties. Finally, in collaboration with groups of Milan Balaz and Krisztina Varga we are trying to understand the mysteries of interactions of chiral ligands with semiconductor quantum dots by using high level, quantum mechanical computational methods. The Kubelka group currently consists of three graduate students, Ben Anderson, Ginka Kubelka and Jason Lai, who are all working on their dissertations and getting ready to graduate with their PhDs. Last year our group published six journal articles and presented five posters at two international conferences. We are grateful to the National Science Foundation CAREER grant for supporting our work.

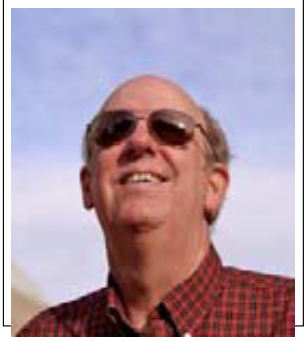
TERESA LEHMANN

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 2nd year grad student who just passed his prelim and his now working hard to finish his first publication about depositing Pd on metal carbide materials and studying their catalytic properties. Yagya continues to work on bimetallic carbide compounds and recently published two papers about their catalytic activities for water splitting. He is also preparing to graduate this summer. Cheng published a paper this year about the doping Mo2C with iron and its improved properties. This is one of the first metal carbide systems to be doped with a second metal and will open up a new field of tuning carbides and their properties. He also received a SER graduate fellowship to fund his work for the coming year. Samantha recently published her research on the mechanism of our salt flux synthesis. This is a big paper that shines some light on the reaction process and gives the group insight into further using it to create bimetallic compounds. Yagya, Sami, and Cheng all presented their work at ACS Denver this spring in oral presentations and Jimmy had his first poster from the Leonard group there as well. Undergraduate Kyle Duffee will be graduating this spring and will be off to graduate school later this fall. We will definitely miss him around the lab. The Leonard Group also picked up a couple of new undergraduate researchers this spring, Dale Clouser and Spencer Moul have been working on various projects and helping out around the lab. We will also welcome Kimberley Caywood this summer as the latest addition to the group. This has been one of the most productive years for the Leonard Research group as many projects are becoming mature enough for publications and students are preparing for graduation. Many papers and presentation highlight the great things happening in the Leonard Research Group this year.

BRUCE PARKINSON



University of Wyoming Professor Bruce Parkinson, recognized internationally as a leading researcher in harnessing solar energy, has been selected to receive an Alexander von Humboldt Foundation Research Award. The award, which promotes international cultural dialogue and academic exchange, recognizes academics whose fundamental discoveries, new theories, or insights have had a significant impact on their own discipline and who are expected to continue producing cutting-edge achievements in the future. The Humboldt Award recognizes Parkinson's entire achievements to date.

Parkinson, the J.E. Warren Professor of Energy and Environment, and a Professor in the School of Energy Resources and in the Chemistry Department, is on sabbatical this semester at the Technical University in Darmstadt, Germany where he is studying solar energy conversion and storage. Humboldt Award winners are invited and provided funding to spend a period of up to one year cooperating on a long-term research project with specialist colleagues at research institutions in Germany. Parkinson leads a research group that investigates novel methods to harness solar energy. He is expert in developing and evaluating novel materials with photovoltaic properties to convert solar energy into useable energy forms. He also is an expert in surface chemistry and recently has been investigating the influence of photochemistry on the surface of Mars. Parkinson has published over 200 papers in professional journals, and holds four U.S. patents. He is a Fellow of the American Association for the Advancement of Science and last fall was named a Fellow of the Electrochemical Society.

DEAN RODDICK

The Roddick group currently has four graduate students and an undergraduate working in our lab. Bhusan Thapaliya (Ph.D.) will be defending his thesis this June, and joined the research staff at Cody Laboratories, Inc. this January. Gabriel Venegas (M.S.) defended his dissertation this past December. Tamara Sibray hopes to defend her Ph.D. this Fall. Suman Debnath (Ph.D., 4th year) presented his research at the Denver National ACS Meeting this April. In alumni news, R. Chris Schnabel (Ph.D. 1995, Chemistry Faculty at Eckerd College) is co-authoring an undergraduate text version of the landmark Shriver and Atkins entitled "Essentials of Inorganic Chemistry" that should be published in the Fall of 2015. Brian Gruver (Ph.D. 2012) has expanded his work as a laboratory manager at Koch AG & Energy Solutions LLC (Fort Dodge, IA) and will now provide support as a Cross Site Catalyst Subject Matter Expert for the Nitrogen Operations Plants.

JING ZHOU

Jing Zhou's group focuses on the growth and characterization of oxide-supported Ni and Au nanoparticles for reforming, water-gas shift and CO oxidation reactions. The group welcomed Rachel Huang last May. Rachel is a high school student from Laramie. She used the sol-gel method to grow ceria-supported Au and examined its reactivity for the water-gas shift reaction. She competed in the Wyoming State Science Fair and received the third place. Another news from the group is that Jing and Erik visited Dr. Jose Rodriguez's at Brookhaven National Laboratory in the spring of 2015. It was a great research experience for them. The group is continuously presenting results at national meetings as well as manuscripts and 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.

2nd 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 Thursday, April 30th, 2015

CRC Press Freshman Chemistry Achievement Award
Gemma Szott
2015 Undergraduate Award in Analytical Chemistry
Sierra Jech
2015 Undergraduate Award in Inorganic Chemistry
Kyle Duffee
2015 Undergraduate Award in Organic Chemistry
Drew Newman
Outstanding Freshman Award
Jacob Williams
Outstanding Sophomore Award
Jose Cabrera Rodas
Outstanding Junior Award
Larissa Siirila
Tyler Schriber
Outstanding Senior Award
Claire Korpela
Howard H. Heady Scholarship in Chemistry
Joshua Henry
Walter F. and Barry D. Gasdek Scholarship
Sierra Jech
Arthur Gray Janssen Award
Rachael Winden
Asplund Academic Excellence Prize
Jonathan Kephart

Asplund Undergraduate Research Prize
Kyle Duffee
Edgar Bailey Smith Chemistry Scholarship
Larissa Siirila
Cliff ord C. Hach Memorial Scholarship
Kaycee Filmore
Hannah Mills
Alexander Sawaya

EXTERNAL AWARDS

UW International Undergraduate Student Award for Excellence in Internationalization
Jose Cabrera Rodas
Academic and Cultural Experience at Shanghai Normal University
Drew Newman
University of Utah 2015 Summer REU Awardee
Jonathan Kephart
A&S Outstanding Graduating Senior
Kyle Duffee & Drew Newman
Schierz Award
Michael Seas
WY NASA Space Grant Undergraduate Research Fellowship
Aaron Strom

SUPERIOR STUDENT AWARDS

Stanley DeVore
Gemma Szott
Jonathan Cauffman
Claire Korpela
Jacob Williams
Aaron Cheese
Kaisha Nielson
Jessica Hunt
Joshua Henry
Tyler Schriber
Kyle Duffee
Jonathan Kephart
Larissa Siirila
Jose Cabrera Rodas
Amanda Markus
Jacob Schmied
Courtney Colwell
Drew Newman
McKenezie Brogan
Elayna Mahone
Sierra Jech
Mark Kim
Annie Krueger
Emily Woodard
Zoe McDonald
Kenny Madsen
Trae Travitz
Rachael Winden
Matthew Hurlock
Jordan Brophy
Erin Fulton
Deborah Rulf
Britni Luther
Jencee Reardon
Wilarachchige Gunatilleke
Joshua Messer

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 fewer 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.

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

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

□Chemistry General Donation Fund

Scholarship Funds:

□Owen Asplund Prize Fund

□Howard Heady Scholarship Fund (Chemistry)

□Arthur Gray Janssen Scholarship

□Rebecca Raulins Undergraduate Research Fund

□Sara Jane Rhoads Graduate Research Award

□Hans Peter Richert Memorial Fund

□Edgar Bailey Smith Chemistry Scholarship

□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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