AlasChemist
Department of Chemistry & Biochemistry
University of Alaska Fairbanks
Newsletter June 2007 Volume 25

A Note From Our Department Chair ~ Tom Clausen

A few days ago I attended a gathering of retired and current faculty / staff members. Some of you may remember Professors **Claron Hoskins** and **Charlie Genaux** who represented people from the Department's retired club. This month, **Paul Reichardt** (who moved from our department to be provost) will be added to the retirement list. In addition, about 10 minutes ago, I said goodbye to our beloved **Sheila Chapin** who is now on the road heading towards Oregon. Hence, this academic year ends with two fantastic people who shaped the department as much as anyone leaving to enjoy their well-earned retirement. I would like to start this note by saying how much they will be missed and to wish them both the grandest of retirements!

On the plus side, one of the department's greatest achievements this year was recruiting **Mist D'June Gussak** to take over Sheila's duties. Like Sheila, she is an advocate for students, the department, college and university. Like Sheila, she is a very nice person. And like Sheila, she has a great deal of experience at UAF (we recruited her from the advising center). My fears (shared by others) that chaos was going to reign when Sheila left are thankfully not going to be realized. When you come by the department, please stop by and introduce yourself to her. I am sure you will agree with our appraisement of her.

Drs. **Todd Gouin** and **Marina Castillo** are recent additions to our Environmental and Biochemistry / Molecular Biology programs respectively and I believe they will help shape the direction our department takes for years to come. They both have the qualities the department values so greatly: dedicated and talented teachers at both the graduate and undergraduate levels, proven research successes in areas important for Alaska, and a desire to help our students be successful. I very much enjoy working with Marina and I look forward to having Todd arrive on our doorstep this fall.

One of the highlights of this year was recognition given to UAF by Academic Analytics (www.academicanalytics.com). UAF was nationally ranked as #9 against all other institutions in the areas of Atmospheric and Environmental Sciences. In addition, we were ranked #5 for faculty productivity for small research universities. While this is an honor for UAF as a whole, it could be strongly argued that our department played a significant role in this recognition.

Photo by M. D'June Gussak

Tom Clausen

Several of the department's faculty earned special recognition for their achievements this year. **Larry Duffy** is this year's recipient of the second Sven Ebbesson Award for Excellence in Neuroscience, and **Kelly Drew** was this year's winner of the Usibelli Award for Excellence in Teaching.

(continued on page 2)

Sheila Chapin

Photo by M. D'June Gussak

Tom & Sheila Chapin

From my heart, thank you to one and all for 27 wonderful, fun years in the department. Let me say that there were never any dull moments. For those that missed the end of year party, the gifts were awesome. I am now the proud owner of a Bernina Deco340 embroidery machine and Marlys sewed the blocks together for a wall hanging from block contributions by many. Thanks so much.

Through many of your efforts I was named "Best Secretary" and then later recipient of the "Make Students Count" award. I've had a few pranks pulled on me by faculty and students and participated in a few myself; watched love blossom and grow; and totally enjoy hearing from those that respond back after receiving the *AlasChemist*. I feel like a mother hen with chicks all over the world. We are a very diverse group in interests and occupations. I will enjoy receiving the *AlasChemist* and reading about what everyone is doing with their lives.

My husband and I will be retiring to the Eugene, Oregon area in June and would love to hear from anyone that feels so inclined at **chapin.sheila@gmail.com**. Once I have a good address, I will let the department know. Our door will always be open.

I feel confident that I am leaving the office in good hands with Mist D'June Gussak. Please welcome her when you get the chance.

Thanks for the memories. *Sheila*

Photo by M. D'June Gussak

Sheila's Quilt

William Howard ~ Inorganic Chemistry

Greg Cushing and I published one peer-reviewed research article describing the synthesis, structure, and spectroscopic characterization of *mer*-$[MCl_3(Me_2pzH)_3] \cdot CH_3OH$ (M = Rh, Ir; Me_2pzH = 3,5-dimethylpyrazole). Greg carried out all the density functional theory calculations for these complexes, using the Arctic Regional Supercomputing Facility. I presented our results at a poster session of the American Chemical Society's 233rd National Meeting & Exposition in Chicago in March, 2007.

Zachary Pickett has recently completed his second year of graduate study, and it is likely that at least two publications will result from his work. The first will be concerned with modeling the transferrin – vanadium complex that forms when vanadium compounds enter the blood. Zach has used triethylenetetraaminehexaacetic acid (H_6ttha) to model transferrin and has found that H_6ttha, like transferrin, reacts with most insulin-enhancing vanadium complexes, easily displacing the ancillary ligands to form the known trinuclear complex, $[VO(H_2O)_5][(VO)_2(ttha)] \cdot 4\ H_2O$. The kinetics of the reaction between H_6ttha and *bis*(maltolato) oxovanadium(IV) suggest that this ligand displacement occurs through a transition state involving one molecule of *bis* (maltolato)oxovanadium(IV) and half a molecule of H_6ttha.

Zach's second project focuses on the thermodynamics of ancillary ligand exchange among $[VO_2(dipic)]^-$ and $[VO_2(pydim\text{-}X)]^-$ derivatives (dipic = 2,6-pyridinedicarboxylato; pydim-X = 4-X-2,6-pyridinedimethanolato; X = H, Cl, N$(CH_3)_2$). For example, using ^{51}V NMR spectroscopy, Zach has measured the equilibrium constants at various temperatures for the reaction between 2,6-pyridinedimethanol and $[VO_2(dipic)]^-$ that produces 2,6-pyridinedicarboxylic acid and $[VO_2(pydim\text{-}H)]^-$. A van't Hoff plot reveals that $\Delta G^o = 9 \pm 2$ kJ mol^{-1}, $\Delta H^o = -22 \pm 3$ kJ mol^{-1}, and $\Delta S^o = -100 \pm 20$ J mol^{-1} K^{-1} for this particular reaction.

Zach and I have also recently begun a collaboration with Professor **Marc Perry**, in the Department of Chemistry at the University of Alaska Anchorage. Dr. Perry has prepared a number of mononuclear rhodium complexes stabilized by monodentate or bidentate N-heterocyclic carbene ligands and has asked Zach to characterize the complexes by cyclic voltammetry in order to learn how the carbene ligands bond to the rhodium center. For instance, if the rhodium – carbene bonds feature significant d – π* backbonding, then it is expected that the standard reduction potentials for coordinated carbene ligands should be lower than those of the free carbenes.

Ashley K. Anderson, an undergraduate chemistry major who has worked in my laboratory in the past, will graduate in May, 2007 and will formally begin her Masters work in the fall 2007 semester. Ashley's project will center on organometallic synthesis and mechanistic work, involving sulfido, selenido, and tellurido derivatives of (pentamethylcyclopentadienyl)rhenium.

Photo by M. D'June Gussak

William Howard & Zachary Pickett

A Note From Our Department Chair continued...

I am particularly proud of the fact that four faculty in the department have received these highly prestigious awards. Dr. **John Keller** was recognized at the college picnic this year for outstanding teaching. Dr. **Paul Reichardt** was awarded the Edith R. Bull Excellence in Service to UAF award and has been further recognized by having the Natural Science Facility officially renamed to the *Reichardt Building*. Dr. **Thomas Kuhn** received this year's Feist/Schamel Outstanding Faculty Advisor Award. Lastly, I am pleased to state that Dr. **Marvin Schulte** has just recently been awarded tenure at UAF.

I have always maintained that the quality of the department is reflected by the success of its students. Three of our students have been accepted to medical school: **Chelsea Paskvan** will be attending Midwest University Medical School while **Tania Deisher** and **Elizabeth Hankinson** will be attending the University Of Washington School Of Medicine. Two of our undergraduates, **Grant Wright** and **Rodney Guritz**, have received EPSCoR undergraduate research awards. **Michael Wilkinson** (chemistry minor) was this year's Outstanding Male Graduate and Commencement Speaker for the graduating class of 2007.

So I will conclude by saying that while the department is changing with retirements, new hires and a steady stream of students in our hallways and research labs, the excellence that is represented by our faculty, staff, and students remains of the highest caliber. Stop by when you are in the area and let me give you a tour of our evolving department that I am so proud of.

Photo by M. D'June Gussak

Alaska Range at Daybreak

Thomas Trainor ~ Environmental Chemistry and Geochemistry; Surface Chemistry

The past year included a number of highlights, and new additions to the lab. MS student **Kristen Williams** defended her thesis on "The impact of ferrous iron on mercury adsorption to iron-oxides" this spring. Another member of our group, **Dr. Cynthia Lo**, finished her postdoctoral work with our group and has accepted a faculty position in the Department of Chemical Engineering at Washington University in St. Louis. In the fall of 2006, two new MS students joined the group: **Vanessa Ritchie** who started her project looking at antimony speciation in Interior Alaska as an undergraduate student, and **Raena Rowland** who is working on the electrochemical characterization of corrosion layers on conductive mineral surfaces. Continuing in the lab are Ph.D. students **Kunaljeet Tanwar** and **Anastasia Ilgen**, and research associate **Dr. Sarah Petitto**.

Kunaljeet had an exciting year, including getting married, and having two first author papers accepted. Anastasia completed her field work in Kamchatka Russia last August, and is working hard to process the samples. Sarah has developed a new electrochemical cell that can be used during x-ray scattering measurements to allow structural characterization of oxide surfaces under variable applied potentials. Sarah also presented her most recent results at this years International Workshop on Oxide Surfaces in Lake Tahoe, CA.

Also working in the lab this year was undergraduate student **Ashley Jones**, who was investigating antimony adsorption on iron-oxides. Ashley has decided to stay on and work on an MS degree starting in the fall. We also have a new postdoctoral research associate joining us soon, **Dr. Chris Iceman**, to work on computational aspects of oxide surface chemistry.

Our group was well represented at the fall 2006 National American Chemical Society meeting in San Francisco. I gave an invited presentation in the Geochemistry Division on the application of x-ray scattering methods to study mineral-water interface systems, and a second talk in a special symposium on environmental interfaces that highlighted some of our recent work on iron-oxide surface chemistry. **Sarah Petitto**, **Kunaljeet Tanwar, Cynthia Lo**, and **Sanjit Ghose** (postdoctoral researcher at University of Chicago working on a joint project with our group) all presented their work as well.

We are looking forward to a busy and exciting summer.

Photo by M. D'June Gussak

Thomas Trainor

Thomas Green ~ Organic Chemistry

"Rien ne se perd, rien ne se crée, tout se transforme."

"Nothing is lost, nothing is created, all is transformed"

Antoine-Laurent de Lavoisier, 1743-1794, Father of Modern Chemistry

The history of chemistry is a fascinating subject, and I often wonder why we don't teach more of it in our chemistry courses. In recent years, I have attempted to introduce more history into the classroom. For example, I discuss some of the accomplishments of the great organic chemists of our time, such as Herbert Brown, Donald Cram, George Olah and others. I think students appreciate it.

It has been a good year for me both in teaching and research. I continue to teach organic chemistry, both the laboratory and lecture, which I always enjoy. This spring, I also taught a course on Nuclear Magnetic Resonance Spectroscopy. This topic has always been fascinating to me because NMR has become such a powerful tool for biologists and chemists alike. It is especially useful in organic chemistry (structure determination) and medicine (MRI). I had six students in the class; they all presented excellent posters at the end of the semester on different capabilities of our departmental Varian NMR Spectrometer.

I also became a student again this past year, taking two semesters of French here at UAF. I felt very fortunate to receive a grade of "B"! My hope is for a sabbatical to France next year to work with Professor Eric Monflier of the Universite' d'Artois, a collaborator of mine.

I currently have three graduate students in my research laboratory. **Daniel Kirschner** is a Ph.D. student pursuing Bioanalytical Chemistry (Interdisciplinary) with a focus on capillary electrophoresis of brain metabolites. He recently co-authored a research article in Analytical Chemistry along with **Michael Jaramillo**. Michael is pursuing an M.S. degree, focusing on newly synthesized cyclodextrins and their applications in phase transfer catalysis. **Jim Warner** also recently joined my group as a Ph.D. student, where he is pursuing a proteomic project on hibernation. He plans to exploit a technique called Surface Enhanced Laser Desorption Ionization or SELDI. SELDI is a powerful mass spectrometric technique for protein analysis.

Paul B. Reichardt Building

The Natural Science Facility
is renamed for
Paul. B. Reichardt
as an acknowledgment
of his exemplary service
and philanthropy to
the university.
The renaming dedication was
June 7, 2007

Photo by M. D'June Gussak

Graduates Honored Commencement 2007

Photo by Mr. Baxter

Front Row: A. Baxter, B. Dykstra, S. Brown, J. Coon, A. Anderson, K. Dunlap, K. Williams, C. Cahill

Back Row: W. Simpson, J. Keller, T. Clausen, B. Rasley, T. Green

Doctor of Philosophy Degrees

Kriya L. Dunlap
Ph.D. Nutrition: Interdisciplinary Program. B.S. Cornell University (New York) 1998; M.S., University of Alaska Fairbanks, 2003

Master's Degrees

Adlai J. Burman**
M.S., Biochemistry/Molecular Biology. B.S, University of Alaska Fairbanks 1999

Richard J. Hallock
M.A., Chemistry. B.S. University of Alaska Fairbanks 2005

Kristen R. Williams-Jimenez***
M.S., Environmental Chemistry

* Summer 2006 degree recipient
** December 2006 degree recipient
*** Intended Summer 2007 degree recipient

Baccalaureate Degrees

Ashley K. Anderson
B.S., Chemistry

Adam W. Baxter***
B.S., Chemistry

Sally J. Brown
B.S., Chemistry: Biochemistry/ Molecular Biology

Jamie L. Coon
B.S., Chemistry: Juristic

Jolie D. Crow
B.S., Chemistry: Biochemistry/ Molecular Biology

Brittany L. Dykstra
cum laude, B.S., Chemistry: Biochemistry/ Molecular Biology

Jeffrey L. Gimble**
B.S., Chemistry: Biochemistry/ Molecular Biology

Rodney D. Guritz**
cum laude, B.S. Chemistry; Environmental Chemistry

Danielle G. Harris*
B.S., Chemistry: Biochemistry/ Molecular Biology

Michael Jaramillo**
B.S., Chemistry

Ashley M. Jones
B.S. Chemistry; Environmental Chemistry

Ann L. Wilson**
cum laude, B.S., Chemistry: Biochemistry/ Molecular Biology
Golden Key Honor Society

Celebrating Excellence

Outstanding Chemistry Student
Amy Rask

Elaine Jacobson Scholarship
Bronwyn Harrod

Freshman Chemistry Award
Kristy Schults & Bethany Freel

Undergraduate Award in Analytical Chemistry
Elizabeth Harbermann

Alaska Chapter American Chemical Society Award
Rodney Guritz

American Institute of Chemistry ~ Undergraduate
Ashley Jones & Brittany Dykstra

American Institute of Chemistry ~ Graduate
Dan Kirschner & Sreepruna Malakar

Hask Scientific Foundation Scholarship
Shandra Miller

Ronald Cosgrove Scholarship
Colin McGill

Outstanding Male Graduate—Class of 2007 Commencement 2007 Class Speaker
Michael Wilkinson ~ BS Biological Sciences (Minor in Chemistry)

Photo by M. D'June Gussak

Kunaljeet Tanwar ~ Environmental PhD graduate student working in T. Trainor's Lab

Potpourri ~ Marlys Schneider

It's hard to believe, but the fourteenth Annual Science Potpourri was held this April. Attendance this year was about 450 people, up from our usual 300. Visitors to the chemistry tables made slime, played with Magic Sand ®, UV active beads, sampled liquid nitrogen ice cream, and experimented with Memory® wire. Superconductivity was also demonstrated. This year we gave kids helium filled balloons and Memory ® wire. The Chemistry Show in Sciences Theater was expertly organized and presented by Dr. Cathy Cahill and grad students **Daniel Kirschner** and **Mike Jamarillo**.

The success of this year's Science Potpourri was due to generous donations of time and money from many organizations and individuals. First I want to acknowledge financial contributions from EPSCoR (U.S. Department of Energy's Experimental Program to Stimulate Competitive Research), the Alaska Chapter of Sigma Xi, the Alaska Chapter of the American Association for the Advancement of Science, the Alaska Section of the American Chemical Society, the Alaska Statewide High School Science Symposium, Sourdough Jim's Web Design, the UAF College of Natural Sciences and Mathematics, UAF Department of Chemistry and Biochemistry, and UAF Department of Geology and Geophysics.

Next I want to thank the many groups and programs that provided activities and manpower for Science Potpourri. These were the Arctic Region Supercomputing Center, the Alaska Earthquake Information Center, the Alaska Neuroscience Program, the Alaska Satellite Facility, the Institute of Arctic Biology, the Reindeer Research Program, the Planetary Science Group, the Science Education Outreach Network, the Chemistry and Biochemistry Department, the Chemistry Club, the Geology and Geophysics Department, the Geo Club, the Physics Department, the Society of Physics Students, the Remote Sensing Program, the Alaska Volcano Observatory, and lastly the Fairbanks Spinners and Weavers Guild.

Producing Potpourri was a team effort, with Jeff Drake (GI), Bill Witte and Delores van der Kolk (geology) helping me (Marlys Schneider) with recruiting and organizing all of the participants.

William Simpson ~ Physical and Atmospheric Chemistry; Laser Spectroscopy

This year seemed particularly busy with the faculty search in Environmental Chemistry and teaching and research activities. I'm very happy that Todd Gouin has accepted our position and will be a new member of the thriving Environmental Chemistry group. In teaching this year, I enjoyed the Physical Chemistry Laboratory in the Fall and Atmospheric Chemistry in the Spring. Atmospheric Chemistry was very exciting to teach because we had 16 students! That's a lot of interest for this subject. Students were from Chemistry – both undergraduate and graduate, and from Atmospheric Sciences. The combination of students with differing backgrounds made the class challenging but fun to teach.

In this year, I co-wrote a major review article on "Halogens and their role in polar boundary-layer ozone depletion." This huge paper took a long time, but came out well in the end. We also wrote a number of papers regarding halogen, mercury, and snow chemistry and proposed a new idea in how sea salts become atmospherically accessible and converted to reactive halogens. These ideas are important because reactive halogen chemistry in the Arctic deposits mercury to the snow and probably provides a route for mercury to enter biological systems and eventually affect humans. Graduate students **Laura Alvarez-Aviles** and **Dan Carlson** headed up this halogen chemistry project. Laura is nearing completion of her Ph.D., and took the leadership role in guiding this year's field studies in Barrow, Alaska, which went great! Dan and I went to an ice camp on the surface of the sea ice, 170 miles north of Prudhoe Bay and investigated types of sea ice we had never previously experienced. We returned with new appreciation for sea ice variability and new ideas on how sea ice affects atmospheric chemistry. We deployed a spectrometer in Barrow to study halogen activation. We were funded to develop autonomous buoys that will be deployed on sea ice and drift with that sea ice across the Arctic Basin. These buoys will be the first to report chemical concentrations from these remote locations and will telemeter the data back via satellite modems. We continued studies of nighttime nitrogen oxide chemistry involving measurements of N_2O_5 (dinitrogen pentoxide) using cavity ring-down spectroscopy (CRDS). Graduate students **Randy Apodaca** and **Dea Huff** led these efforts. In the fall, they completed construction of our final instrument, and in spring deployed them to study Fairbanks nitrogen pollution and the fate of nitrogen oxides produced in Fairbanks. Randy also prepared the instrument to go to an instrumental intercomparison in Juelich, Germany during June 2007.

On the home front, Maggie and Amelia (age 5) are doing great. Amelia is in preschool at the Bunnell House on campus, which is a great experience for her. Maggie and I enjoy her increasing independence, unique insights into things, and her joyful nature. Maggie is happy to be finding more time to do things outside the critical job of motherhood. In the upcoming fall, Amelia will go to kindergarten. How fast they grow!

Photo by M. D'June Gussak

Bill Simpson & Randy Apodaca

Welcome New faculty Todd Gouin ~ Environmental Chemistry

Photo by Svitlana Pcholkina

Todd Gouin: Air sampling activities at Monteverde, Costa Rica.

It is with great delight that I will be joining the Department of Chemistry and Biochemistry at UAF this August. I believe that the location of Fairbanks provides a fantastic opportunity to pursue many of my research interests, in which I am interested in better understanding the environmental fate and distribution of persistent organic pollutants (POPs) in non-temperate regions. POPs are substances that persist in the environment, have the potential for long-range atmospheric transport (LRAT), and have the potential to cause a toxic effect. Currently our understanding of the environmental fate and behaviour of POPs in temperate regions is relatively well understood. Our understanding regarding how POPs behave in non-temperate regions, particularly in tropical rainforests and high latitudes, however, is relatively poor. It is well understood that the identification of pollutant sources is the primary objective in devising effective strategies to limit the exposure of populations and sensitive ecosystems to potentially harmful substances. Because the atmosphere is the most important pathway in the regional and global cycling of POPs, identifying the distribution of POPs in air is critical for better understanding source-receptor relationships.

Thus much of the research I have been involved with has been aimed at mapping the spatial distribution of POPs in different ecosystems, such as throughout the Laurentian Great Lakes, and the tropical rainforest in Costa Rica, with the objective of identifying potential source-receptor relationships. This is work that I have done as part of my graduate studies at Trent University, in Peterborough, Ontario, Canada, and in my current post-doctoral position at the University of Toronto. At UAF, it is my intention, therefore, to initiate a research program that will be aimed at mapping the spatial distribution of POPs across Alaska, in which it is hoped that we might better understand the potential for trans-Pacific transport of these contaminants to the Arctic. As a first step towards better understanding air concentration data in general, I am hopeful that my first graduate student, **Shandra Miller**, will develop a synoptic climatological approach for POPs, as part of her M.S. project.

I am very grateful to the members of the environmental analytical chemistry, selection committee (William Simpson, Cathy Cahill, and Tom Trainor) who have provided me with this opportunity to pursue my research interests, particularly in a department that is comprised of such a wonderful group of individuals. This is clearly evident in individuals like John Keller, who has included me as a Co-PI on an NSF equipment proposal, in which we hope to update the GC/MS instrumentation in the department. We anticipate that the capabilities of this new instrument will benefit the curriculum for several different undergraduate courses.

Welcome New faculty Marina Castillo ~ Biochemistry

Photo by M. D'June

Marina Castillo

I am one of the two new additions to the Chemistry department this year. I graduated from the University of Rhode Island in 1995 with a Ph.D. in Pharmacology and Toxicology focused on calcium^{2+}-dependent mechanisms of neurotoxicity. I worked for a pharmaceutical company, a subsidiary of Schering AG in Mexico as the Head of their Quality Control unit before deciding to move to Alaska along with my family in 2001 to continue my research and teaching career.

This summer I am teaching Chem 195 for the RAHI program and I am also setting up my lab within the Chemistry Department in order to get my research projects going. The focus of the research is on mechanisms of arsenic neurotoxicity. I am interested in cytotoxic mechanisms of low arsenic exposures that do not kill neuronal cells immediately but affect structure and function with the corresponding consequences to neurodevelopment. The experimental model consists of a human neuroblastoma cell line and a variety of pharmacological tools, biochemical assays, gene transfection, immunocytochemistry, and more. Also a focus of this project is to test antioxidants and other compounds found in Alaskan blueberry extracts for neuroprotection against arsenic-induced neurotoxicity.

I am looking forward to this coming fall semester!!

Photos by Joel Vonnahme

Summer Sessions Chemistry 105

Instructor Alicia Porter demonstrates

$2H_{2(g)} + O_{2(g)} + \text{Heat} \rightarrow 2H_2O_{(g)}$

Lawrence K. Duffy ~ Neurochemistry/Protein Chemistry & Biochemistry

It was a busy academic year starting with the Arctic Peoples and Beyond: Decreasing Health Disparities Conference last June and followed by the Arctic Division of AAAS meeting in October. Last year, I taught Chem 100 (Chemistry in Complex Systems) and Chem 655 (Environmental Biochemistry and Ecotoxicology). This graduate course supports not only our growing biochemistry and neurochemistry program, but also matches nicely with my interest in environmental health and justice issues.

This year several students in the lab moved forward with their careers. **Kriya Dunlap** finished her Ph.D. degree and published several papers on biochemistry and physiology of sled dogs during exercise. **Richard Hallock** finished his masters degree research with his project on Hg in the reindeer on the Seward Peninsula. **Elizabeth Hankinson** is moving on to medical school as she joints the WWAMI program next fall. The lab is not completely empty as **Anna Godduhn** and **Alicia Porter** continue their degree programs. **Jim Lokken**, from Lathrop High School, a Murdock Fellow, is continuing our work on reindeer by looking at Hg in lichens on the Seward Peninsula.

With the help of NSF funding and outstanding colleagues, **Cathy Middlecamp** (Univ. of Wisconsin-Madison), **Dave Barnes** (EQE-CE) and **Cindy Fabbri** (SOE), we are developing a new course "Environmental Radioactivity, Stewardship and People in the North". At UAF, science courses tend to focus on teaching concepts and theories that are content dependent and context independent rather than on the ways scientific evidence is used to validate knowledge claims, and how that knowledge is used to make informed civic decisions. Recent research suggests that exposure to college level science courses is an important source of adult scientific literacy, so reforms at this level are likely to have significant impact. In developing this course, we will use methods to successfully integrate a service-based learning option along with in-class activities. In this way students will not only learn about key nuclear and health processes, but also how culture helps scientists understand and solve relevant community-based, science-related problems. This course is also part of a coordinated effort by UAF to leave a lasting impact from International Polar Year (IPY).

Photo by M. D'June Gussak

Larry Duffy

John Keller ~ Organic and Biochemistry

The 2006-2007 school year has been interesting! I taught my usual assignment of four courses, including the first and second semester organic chemistry lecture courses (321 and 322), a semester of organic chemistry lab (324), and the first-semester general chemistry course (105). The introduction of "clickers" in chemistry lecture courses continues to provide challenges for students and teachers. (Clickers are radio-frequency response cards that students use to answer quiz questions in class.) I was a member of campus "clicker committee" that evaluated different hardware-software options for possible campus-wide standardization. In the end, since chemistry, biology, and history classes already had been using the TurningPoint system (www.turningtechnologies.com), we recommended this system as a UAF standard. These clickers will now be sold (new and used) and serviced through the bookstore, which will be convenient for students. In my Chem 105 class I found that attendance was definitely improved by asking graded questions during lecture. However, the overall success rate for this class "still needs improvement." We are planning to tighten up the math prerequisite for Chem 105. This may decrease the total enrollment, but hopefully more of those enrolled will be able to handle the minimal math requirements in the course.

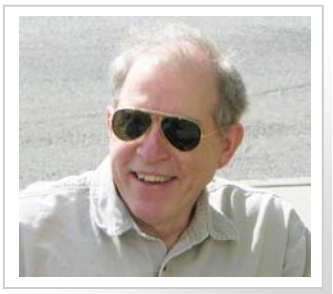

Photo by M. D'June Gussak

John Keller

In the research realm, I worked with several outstanding young researchers this year. **Carey Fristoe** from West Valley High School did his Alaska High School Science Symposium project in my lab investigating further aspects of Lewis acid-catalyzed Diels-Alder reactions. He showed that ethyl aluminum dichloride is an excellent catalyst for stereoselective addition of carvone to cyclopentadiene. **Bronwyn Lee Harrod** received the Elaine Jacobson Scholarship (even though she is still in high school), and she worked in my lab carrying out spectroscopic and computational studies on SO_2-formic acid complexes. SO_2 became the object of a laboratory project as a result of our reading about its interesting properties in "Uncle Tungsten: Memories of a Chemical Boyhood" by Oliver Sacks. Another outstanding freshman, **Trilainna Stanton**, worked with me on a biochemistry project involving production, purification, and kinetic characterization of a mutant dialkylglycine decarboxylase enzyme. We presented our results in a poster at the University of Alaska Biomedical Science Conference in April.

Alaska Biomedical Research Conference (UABRC)

The Chemistry sponsored ***Third Annual University of Alaska Biomedical Research Conference*** (UABRC) was a howling success. Nearly 125 students, staff and faculty members from the Departments of Chemistry, Biology, Education, Engineering, and Philosophy gathered at the Museum of the North April 12 and 13, 2007 for two full days of biomedical research presentations.

Following a theme of ***Celebrating Alaska's Research Diversity,*** the conference was divided into four sessions: Environmental Health; Cell Biology and Biochemistry; Toxicology and Infectious Disease and Neuroscience. Keynote speakers included:

- Dr. Gerald Mohatt, CANHR Director, who addressed the ***Future Research Directions of CANHR:***

Questions to explore

- Dr. Carol Lewis, UAF Dean, Agricultural Sciences, ***Growing the 49th State: Basic Research to the Consumer***
- Dr. Jasper Rine, University of California Berkeley, ***Looking for Good News in the Human Genome*** and
- Dr. Troy Zarcone, University of Rochester Medical Center, ***Assessment of Neurobehavioral Function: Models and Methods***

Thirty-four podium presentations by students and faculty demonstrated the impact of biomedical research in Alaska. A student poster session Thursday evening further highlighted the diversity of research conducted across the state. Recognized for excellence in the student podium and poster presentation competition were:

Photo by Lesa Hollen

2007 UABRC Attendees

Photo by Lesa Hollen

Dr. Abel Bult-Ito and Neuroscience keynote speaker Dr. Troy Zarcone

Best Undergraduate Podium Presentation: **Alyssa Jeannet** and **Michael Wilkinson** (Diane O'Brien's laboratory)

Best Undergraduate Poster: **Danielle Mondloch** (Jon Runstadler's laboratory)

Best Graduate Podium Presentation: **David Robinson** (Jocelyn Kreb's laboratory)

Best Graduate Poster: **Meagan Weltzin** (Marvin Schulte's laboratory)

A statewide program, Biochemistry and Molecular Biology faculty members have active biomedical research projects, at UAF, UAA and UAS. The UABRC conference site rotates between these campuses and will be held in Anchorage next year. For more information, contact BMB co-coordinators Tom Kuhn or Marvin Schulte.

Kelly Drew ~ Neuropharmacology

I have been on sabbatical this year working in the Department of Neurology at the University of Miami working on a cardiac arrest model of cerebral ischemia in Arctic ground squirrels. Our goal is to discover how these unique creatures tolerate brain ischemia without neuropathology. These are the only mammals known to tolerate extended periods of low brain blood flow, and they do this even when they are not hibernating. We hope our research will lead to novel treatments to reduce morbidity associated with stroke and cardiac arrest.

My lab in Fairbanks has stayed busy and I owe a lot of thanks to my technician **Jeanette Moore** for keeping things running as smoothly as possible. **Ann Wilson**, BS Chemistry, is working as a technician to bridge her time between her BS and medical and/or graduate school. Graduate student **Lesa Hollen** has been accepted to attend the Gordon Research conference on VISUALIZATION IN SCIENCE & EDUCATION where she will present her animation of glutamatergic neurotransmission. **Tulasi Jinka** is making significant progress in his studies of glutamatergic regulation of hibernation. **Dan Kirshner** with the help of Brian Rasley has developed a microperfusion chamber to measure glu release from brain slices and coupled it with the CE-LIF system for glu and D-ser detection developed with Tom Green. **Spencer Audey** is sharing time between my lab and Barbara Taylor's lab. Together we hope to follow-up on **Huiwen Zhao's** studies of glutamate receptor expression and function in hibernation and ischemia tolerance. **Cecilia Carreiro** is visiting on an exchange program from the University of Brasilia. With help from Jeanette, Cecilia has been studying expression of antioxiant enzymes in brain of Arctic ground squirrels. **Cortney Pylant** and **Lisbet Norris**, two undergraduates, have been assisting with surgery and neuronal cell death analysis. I hear everyone in the lab is anxiously anticipating moving to a larger lab in Irving I, 104. This will consolidate my group who is now spread out between multiple floors of 2 different buildings and bring us all closer to our beloved ground squirrels.

We owe significant thanks to the NIH and DOD for support of our students and research.

Marvin Schulte ~ Biochemistry & Neuropharmacology

Research in my laboratory continues to focus heavily on nicotinic acetylcholine receptors. We are investigating modulators of these receptors and developing biosensor devices to permit rapid evaluation of new drugs. **Anshul Padnya** is leading one project area and is just completing his 3rd year of graduate work. This project is evaluating selective potentiators of the nicotinic receptor subtypes important in Autism and Alzheimer's disease. This project involves extensive collaboration with three other laboratories including Dr. Richard Glennon at Virginia Commonwealth University, Dr. Brian Edmonds at University of Alaska Southeast and Dr. Zsolt Bikadi in Hungary. A second project is being led by **Abe Smyth**. Abe is in the middle of his third year as a graduate student. His thesis project is to engineer nicotinic receptor proteins for use as biosensor molecules. This is a continuing collaboration with Dr. Frank Ji at the Institute for Micromanufacture at Louisiana Tech University. Abe is also working with post-doc Dr. **Jestina Kusina**. Abe and Jestina are co-authors on a soon to be submitted publication resulting from this project; Abe is co-author on a second publication in collaboration with Frank Ji's laboratory.

Two new graduate students officially joined the lab this past year. **Chelsea Paskvan** began working on her M.S. degree in August 2006 although she had been conducting research in my laboratory since she was an undergraduate. As part of the new BMB B.S./M.S. program, Chelsea was able to begin her research before completing her B.S. degree. This shortened the completion time of her M.S. degree to a single year and she is expected to graduate at the end of this summer. Chelsea has been actively working on a review article exploring the role of nicotinic receptors in clinical disorders such as Alzheimer's disease, Autism and Schizophrenia. This article will form a large part of her M.S. thesis and she will be presenting her findings at the International Behavioral Neuroscience Society meeting in Brazil this June. Chelsea was recently accepted at Midwestern University Arizona, College of Medicine and will enter their program in Fall 2007. Congratulations to Chelsea on a fine achievement. A new Ph.D. student, **Meagan Weltzin**, also began working in my laboratory last year and officially entered the Ph.D. program in January of 2007. She has made a stellar start to her graduate career by winning the Best Poster award at the UABRC meeting this spring.

After just a few months of work Meagan and Anshul collected sufficient data to submit an Abstract to the Annual Society for Neuroscience meeting they will be attending in November. They are just completing their first publication on the nicotinic modulation project and will be submitting a second paper by the end of the summer. Meagan also supervised **Brittany Karns**, an undergraduate working in my laboratory during the spring semester. Brittany received an INBRE undergraduate research award to continue work on this project over the summer. The rapid development of this project is a reflection of the hard work and long hours Anshul and Meagan have devoted to this research. Both students were awarded INBRE graduate fellowships to continue this project for another year.

In addition to research, I also had the opportunity to teach one of my favorite undergraduate courses this year – Chemistry 451: General Biochemistry of Metabolism. I enjoy teaching this course because it represents an introduction to the complexity of biochemistry for many students and it is exciting to see their understanding grow as we integrate metabolism into an understanding of human metabolic diseases. This year's class was one of the best. They were attentive, involved and appreciative; all of the elements that make for a great teaching experience.

In addition to classroom teaching I have continued my efforts in program and course development for the Biochemistry and Molecular Biology graduate program. Dr. Kuhn and I co-coordinate this program and set several new goals for the past year. Among these were the expansion of the University of Alaska Biomedical Research Conference (UABRC) that was held in Fairbanks this year, restructuring of the written comprehensive examination for Ph.D. candidates, updating the admissions and retention requirements for graduate students and development of the B.S./ M.S. program.

We have made substantial progress on all of these projects. The UABRC was a great success this year (see details in another AlasChemist article.) with a focus on Alaska's Research Diversity. The program was greatly expanded from previous years and consisted of two days of talks and poster presentations, four keynote speakers and research covering four major thematic areas. Restructuring of the comprehensive examination also began this year with all current BMB students sitting the exam at one time. The goal of this unified examination will be to provide consistent evaluation of all BMB students to assure that they are meeting the high standards of our program. Maintaining the quality of this program will assure that BMB continues to contribute significantly to the growth of biomedicine at UAF. As part of this ongoing effort, we are also working on developing improved admissions standards and procedures. These changes are a reflection of the recent rapid growth of the BMB program and its maturation as a key degree program. One of my most gratifying experiences at UAF has been working on the development of this program and I look forward to the changes the next year will undoubtedly bring.

Tom Clausen – Organic and Natural Products

Teaching remains one of my best experiences at UAF. Besides teaching the organic curriculum, I have lately been assigning myself to teach the second semester of General Chemistry (Chem 106X). This is certainly a challenging course that keeps me busy! Last semester, for instance, I counted 476 email messages I received from my students. Still, the department has been very proactive at making this an exceptional course by holding annual meetings to discuss course content, grading policy, metrics to predict student success, etc. The course IS improving and student responses reflect this assertion.

Organic laboratory (Chem 324W) is another course that keeps me challenged. We have focused on developing experiments that are not "cookbook" but rather are adopted from the chemical literature. We tend to explore stereochemical outcomes of reactions using modern NMR techniques and, using this approach, it is very common for us to be surprised by an unexpected product or result. This spring, for instance, my students discovered that the presence of trace amounts of iodide can dramatically affect the stereochemical outcome of a Diels-Alder derived product. We are currently writing a manuscript to the Journal of Chemical Education that describes our observations.

My research has undergone a significant morph in the last couple of years. Much of my past work has involved isolating, identifying and quantifying plant secondary metabolites that play a role in plant-animal interactions or that are important intermediates in biosynthetic pathways. I have now hooked up with Dr. Kuhn's research group who have developed some outstanding assays to guide my lab in isolating potentially beneficial substances from Alaska Bog Blueberries. We have several active fractions and my student, **Colin McGill**, is now focusing on characterizing a very active lipid that has a molecular weight of about 800. I hope to recruit another student next year to look at other active compounds using bioassays from our biochemists such as Marvin Schulte, Thomas Kuhn and Marina Castillo.

Right now, however, I am moving my research laboratory upstairs to a larger space that will be shared with Dr. Howard. This move will allow Drs. Thomas Kuhn and Marina Castillo to move into my old lab which will be very convenient for future collaborations. While I initially dreaded making the move, I am now over half done and am rather excited about the new possibilities.

With a full teaching schedule, serving on various University committees, acting as department chair and writing manuscripts (three have been submitted and two are in prep), it has been a busy year. The success of my students, however, makes it worthwhile and I look forward to being part of the process again next year. Right now, however, I plan to recharge my batteries by catching some grayling and salmon this summer!

Cathy Cahill ~ Physical and Atmospheric Chemistry

Photo by M. D'June Gussak

Cathy Cahill

The 2006-2007 academic year was another wonderful year for me and my group. I added two excellent new graduate students (**Peter Rinkleff** and **Taryn Lopez**) and one outstanding undergraduate student (**Mitali Patil**). Peter and Taryn will be working with me on volcanic aerosols and sulfur chemistry, respectively. Mitali is working on developing novel ways to detect and classify biological aerosols. **Joy Gonzales**, my other graduate student, made good progress towards her doctorate this year. Overall, it was a good year for the students in my group.

Once again I also had a great bunch of students in my classes. I taught Physical Chemistry I and II this year so I had the same students for the whole year. We had a lot of fun, including doing the Diet Coke™ and Mentos™ experiment at -40 ^{o}F and 60 ^{o}F to see what effect temperature would have on the height of the Diet Coke™ plume. As always, I was reminded of what amazing students we have and why I enjoy teaching at UAF.

The highlight of my research year was being awarded an $800,000, one-year grant to build a prototype aerosol sampler for use on unmanned aircraft and to develop a novel way of detecting and characterizing biological aerosols. I am really looking forward to spending time in my laboratory working with equipment and samples! I also spent time analyzing the volcanic ash from Augustine volcano, working with the Alaska Department of Environmental Conservation to improve air quality in Alaska, helping the National Park Service establish a long-term air monitoring site for its Arctic parks, and assisting the Borough in dealing with the new, lower particulate matter standards. It's been a very busy and successful research year.

I really enjoyed my 2006-2007 academic year; it was productive and fun! I am also looking forward to the 2007-2008 academic year when I am on sabbatical.

Photo by Joel Vonnahme

Summer Sessions Chemistry 105

Instructor Alicia Porter demonstrates Mentos™ in soda.

Brian Rasley ~ Analytical & Inorganic

I had a busy and productive year. I did research in Washington, D.C. last summer at the Naval Research Laboratories (NRL) which resulted in a journal publication and a patent application. Collaborative research with colleagues at NRL will continue this summer. At UAF, I continue to collaborate with Kelly Drew on hibernation research. Current hibernation research is focused on the detection and quantification of adenosine level variations in brain slice preparations. The brain slice research will continue throughout the summer with the assistance of undergraduate **Grant Wright**. I have also been working on a joint project with **Joseph Wenzle** on a USDA project that focuses on the quantification of fat soluble oils in fish processing byproducts. As usual, I had a busy year teaching classes for the chemistry department and the college of rural and community development (CRCD) via distance. Overall, the past year has been an active but gratifying experience.

Tom Kuhn ~ Cellular/Molecular Neuroscience

So there I am writing the last few sentences on my AlasChemist paragraph 2006, when the phone rings and Mist tells me that my AlasChemist paragraph 2007 is way overdue. I am still trying to figure out what happened to this past year. I guess research, teaching, and many other tasks kept me rather busy. Research was productive with many poster and podium presentations at meetings by my students **Brian Barth**, **Sally Brown**, and **Sayali Kulkarni**. We have one manuscript submitted and several are soon ready to be submitted. My research evolves around the molecular mechanism of neuroinflammation and its implication in chronic neurodegenerative diseases, acute eNS trauma, and psychiatric disorders. A neuronal NADPH oxidase and ceramide metabolism composes the current main focus. Sayali studies the consequences of oxidation to the cytoskeleton as one main target of the neuroinflammation and its accompanying oxidative stress. This work is in collaboration with the Schulte lab using surface plasmon resonance technology.

The blueberry collaboration with Dr. Clausen's laboratory is very fruitful. We have found a highly specific inhibitor against neutral sphingomyelinase, a key step in neuroinflammation and its characterization is in view, hopefully soon. Research and students are supported be grants from NlH (SNRP), USDA, the UAF graduate school, and INBRI. I had a hard-working class in Chem 450 General Biochemistry of Macromolecules last fall. Another joint neuroscience course (Cellular and Molecular Neuroscience) with the University of Montana was provided using Access Grid Node technology (AGN). We just received additional funds to install the AGN permanently in Reichardt Building room 165. In the spring, I taught the graduate course "Molecular Foundations of Gene Expression" and we got far discussing over 50 papers (I never counted them but the students did!!) relevant to gene expression and its regulation. We just touched the surface but had a strong emphasis on structure-function aspects.

Another successful UA-BRC meeting was held at the UAF Museum with lots of work by Marvin Schulte, Mary van Muelken, and a bit by myself. We enjoyed excellent presentations and all biomedical programs contributed this year. The Program in Biochemistry and Molecular Biology (BMB), which Marvin Schulte and I co-coordinate, has now implemented a BS/MS Program, and the Comprehensive Exam was slightly revised. As I finish this paragraph I sure hope not to get a call from Mist asking for the 2008 contribution.

Awards ~ Faculty & Staff

Faculty Tenure Recipients

Dr. Marvin Schulte ~ Associate Professor

2007 Sven Ebbesson Award

Dr. Lawrence Duffy ~ Professor

2006-07 Outstanding Teaching Award

Dr. John Keller ~ Professor

Emil Usibelli Distinguished Teaching 2006

Dr. Kelly L. Drew ~ Professor

Robert Piacenza Award Outstanding Teaching 2007

Dr. Thomas P. Clausen ~ Professor

2006-07 Feist/Schamel Outstanding Faculty Advisor Award

Dr. Thomas Kuhn ~ Assistant Professor

Professor Emeriti

Dr. Paul B. Reichardt ~ Professor of Chemistry and Provost, Emeritus

Edith R. Bullock Prize for excellence in service to the University of Alaska

Dr. Paul B. Reichardt

Employee Service Recognition for Faculty & Staff

Marina Castillo ~ 5 Years
Emily Reiter ~ 5 Years
Marlys Schneider ~ 30 Years

Photo by an unidentified tourist in Anchorage

Tom Kuhn

Selected Publications:

Cushing, G. W.; Howard, W. A.; Pang, K. *J. Mol. Struct.* **2006**, "*Mer*-[$MCl_3(Me_2pzH)_3$] (M = Rh, Ir; Me_2pzH = 3,5-Dimethylpyrazole): X-Ray Structures, Spectroscopic Properties, and Density Functional Theory (DFT) Calculations." *797*, 165-73.

Dunlap, K.L., Reynolds, A.J. and Duffy, L.K. **2006** Total antioxidant power in sled dogs supplemented with blueberries and the comparison of blood parameters associated with exercise. Comp. Biochem. Physiol., 143: 429-434.

Dehn, L-A., Follman, E.H., Rosa, C., Duffy, L.K., Thomas, D.L., Bratton, G.R., Taylor, R.J., and O'Hara, T.M. **2006** Stable isotope and trace element. Mar. Pollut. Bull., 52:301-319.

Dehn, L-A., Follman, E.H., Thomas, D.L., Sheffield, G.G., Rosa, C., Duffy, L.K., and O'Hara, T.M. **2006** Trophic relationships in an Arctic food web and implications for trace metal transfer. Sci. Total Environ., 362:103-123.

Shi, B., Liang, H., Kuhn, T.B., and Duffy, L.K. **2006** Surface properties of cell-treated polyethylene terephthalate. Amer. J. Biochem & Biotech., 2:138-145.

Gerlach, S.C., Duffy, L.K., Murray, M.S., Bowers, P.M., Adams, R., and Verbrugge, D.A. **2006** An exploratory study of total mercury levels in archaeological caribou hair from northwest Alaska. Chemosphere, 65:1909-1914.

Dehn, L-A., Sheffield, G.G., Follmann, E.H., Duffy, L.K., Thomas, D.L., and O'Hara, D.M. **2007** Feeding ecology of phocid seals and some walrus in the Alaskan and Canadian Arctic as determined by stomach contents and stable isotope analysis. Polar Biol., 30:167-181.

Zhao H, Ross AP, Christian SL, Buchholz JN, Drew KL,. **2006**, Decreased NR1 phosphorylation and decreased NMDAR function in hibernating Arctic ground squirrels. J. Neurosci. Res., 84(2), 291-298.

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Weber-Scannell, P.K. and Duffy, L.K**. 2007** Effects of total solids on aquatic organisms: a review of literature and recommendation for salmonid species. Amer. J. Environ. Sci., 3:1-6.

Keller, J. W., "Lewis Acid-Catalyzed Diels-Alder Reaction of Carvone with Isoprene. Using Two-Dimensional NMR and Molecular Modeling to Solve a Stereo- and Regiochemical Puzzle". The Chemical Educator, **2006.**

Dunlap, K.L., Reynolds, A.J., Tosini, G., Kerr, G.W. and Duffy, L.K. Season and diurnal melatonin production in exercising sled dogs. Comp. Biochem. Physiol. **2007**, in press.

Duffy, L.K., Bult-Ito, A., Castillo, M., Drew, K., Harris, M., Kuhn, T., Ma, Y., Schulte, M., Taylor, B. and van Mulken, M. Arctic peoples and beyond: research opportunities in neuroscience and behavior. Intern. J. Circumpolar Health, **2007**, in press.

Lo, C.S., K.S. Tanwar, A.M. Chaka, T.P. Trainor **2007** Density Functional Theory Study of the Clean and Hydrated Hematite (1-102) Surface. *Physical Review B*, **75**, 075425 1-15.

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Tanwar, K.S., J.G. Catalano, S.C. Petitto, S.K. Ghose, P.J. Eng, T.P. Trainor **2007** Hydrated Hematite (1-102) Surface: Role of Surface Preparation . *Surface Science Letters*, In Press.

Jun, Y-.S., S.K. Ghose, T.P. Trainor, P.J. Eng, S.T. Martin **2007** Structure of the Hydrated (10-14) Surface of Rhodochrosite. *Environmental Science and Technology*, In Press.

Kirschner, D. L.; Jaramillo, M.; Green, T. K. "Enantioseparation and Stacking of Cyanobenz[f]isoindole-Amino Acids by Reverse Polarity Capillary Electrophoresis and Sulfated beta-Cyclodextrin." Analytical Chemistry **2007**, 79(2), 736-743.

R.E. Samuels, R. Tavernier, M.R. Castillo, A. Bult-Ito and H.D. Piggins. Substance P and neurokinin-1 immunoreactivites in the CNS circadian system of the Alaskan northern red-backed vole, Clethrionomys rutilus. *Peptides*,27(11):2976-2992, **2006**

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M.R. Castillo, K.J. Hochstetler, D.M. Greene, S.I. Firmin, R.J. Tavernier, D.K. Raap, and A. Bult-Ito. Circadian Rhythm of Core Body Temperature in Two Laboratory Mouse Lines. *Physiol and Behav*, 86:538-545, **2005**.

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M. R. Castillo, Does your analytical balance meet the USP requirements? Informaceutico 8(2):41, **2001**. Official Magazine of the Mexican Pharmaceutical Association.M.R.

M.R. Castillo and J. R. Babson. Calcium-dependent mechanisms of cell injury in cultured cortical neurons. Neuroscience 86 (1133-1144), **1998**

Alumni Out & About

Donald W. Linck (B.S. 37) is living in Elko Nevada.

Susan Harder (B.S. 89) is Adjunct Assistant Professor School of Earth and Environmental Sciences Washington State University in Vancouver Washington.

Dr. Howard Merken (B.S. 89, M.S. 91) is currently the Chair of Natural Sciences at Tennessee Temple University. His wife Casandra are proud parents of Chayim Henry Merken born March 21, 2007 as well as a little one who is three by now.

Bryan Smith (B.S. 92) recently returned to Anchorage after 13 years in Colorado where he received his PhD in Chemical Engineering, a wife and a daughter who is almost two by now.

Harold Beine (PhD 96) is currently at the Italian National Research Council, Institute of Atmospheric Pollution near Rome, and is leading the Italian Arctic efforts at Svalbard.

Sherri L. Trask (M.S. 96) is currently working for the State of Alaska Department of Environmental Conservation's Environmental Health Laboratory and is the State Drinking Water Microbiology Laboratory Certification Officer and Microbiological Analyst.

Edward Treadwell (M.S. 96) received tenure at the Department of Chemistry at Eastern Illinois University in Charleston.

Kristen Schults (B.S. 98) is at NOAA/PMEL in Seattle.

Elizabeth Hillard (B.S. 99) is working and living in France.

Kerrie Beckett (M.A. 00) Senior Scientist/Toxicologist Woodlot Alternatives, Inc. in Topsham Maine.

Shane M. Coleman (B.S. 00) is doing medical residency in Psychiatry at Harvard (MGH/McLean) in March 2007.

Tammy Heimerl (B.S. 01) and husband are the proud parent of Kaija born July 20, 2006.

Tammy Thompson (B.S. 01) is a Pharmacist at the Airport Way Safeway

Ryan Elaine Purcell (B.S. 02) is the Technical Development Specialist at Global Resins Analytical Laboratory, Hexion Specialty Chemicals in Springfield Oregon.

Apron Stein (B.S. 02) moved back to Fairbanks in July 2006 and is working as a Pharmacist at Fred Meyers on Airport Way.

Mark Angerhofer (M.S. 03) is working with the Colorado DEC.

Elizabeth E. Hankinson (B.S. 03) has been accepted to the University of Washington School of Medicine entering class of 2007.

George Lee (B.S. 02, M.S. 05) was workings for the State of Alaska Department of Environmental Conservation's Environmental Health Laboratory an Analytical Chemist/Technician. Now he is living at Keiraview Australia conducting research at University of Wollongong.

Andrew Krohn (B.S. 02, M.S. 05) is currently working as the Biological Science Technician, Plant Pathology at the USDA Agricultural Research Service, Subarctic Research Unit

Laurie Martin (B.S. 02, M.S. 05) and **Scott Kemp** (B.S. 03, M.S. 05) were married in Green Valley, Arizona on July 1, 2006.

Kathryn R. Stephan (B.S. 05) is currently in her second year at Marquette University School of Dentistry in Milwaukee, Wisconsin.

Austin (Ross) Sutten (M.A. 03, PhD 05) recently moved to Richmond, Virginia and is the proud new parent of a baby girl.

Abraham Tsigonis (B.S. 05) is currently in the WWAMI Program at the University of Washington Medical School.

Greg Cushing (B.S. 04, M.S. 06) is working in Harrison Lab at the Department of Chemistry University of Virginia in Charlottesville.

Tania H. Deisher (B.S. 06) has been accepted to the University of Washington School of Medicine entering class of 2007.

Michelle Russell (B.S. 06) is attending the University of Illinois-Chicago in the M.S. Forensic Science Program.

Chelsea Paskavan (Intended M.S. Summer 07) will be starting medical school Fall 2007 at Midwestern University at their Phoenix, AZ campus.

Alumni Notes ~ Out & About News Wanted

Department of Chemistry & Biochemistry graduates, where are you? We would like to hear from you. Please feel free to clip out this form and send it to us or send us your update via email to: **fychem@uaf.edu** with the subject line ALUMNI UPDATES. All news will be published in the next issue of AlasChemist.

Visit our web site at: www.uaf.edu/chem

Department of Chemistry & Biochemistry
University of Alaska Fairbanks
P.O. Box 756160
Fairbanks, Alaska 99775-6160
Phone 907-474-5510 • Fax 907-474-5640

Name: _____
Please include maiden name if applicable

Address: _____

City: _____ Sate: _____ Zip: _____

Year Graduated: _____ Degree Received: _____

News for *AlasChemist Out & About* *(education, employment, travel, or family news)*

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Department of Chemistry & Biochemistry
College of Natural Science & Mathematics
University of Alaska Fairbanks
P.O. Box 756160
Fairbanks, Alaska 99775-6160

Inside this issue:

Potpourri 2007

April 14, 2007

Photos by Jeff Drake

Volcano Demonstration by Celso Peyes ~ Liquid Nitrogen in Hot Soapy Water