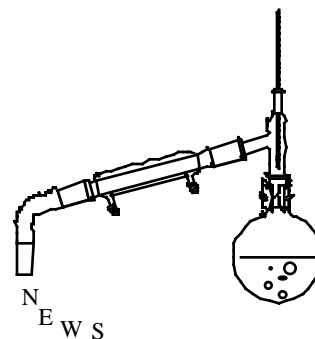


# Distillations

A Newsletter for Chemistry Alumni  
Winter 2000



Tommy Veasey and Brandy Moore are buried among reagent bottles

## Growth in the Chemistry

It is an exciting time in the Chemistry Department. In the fall semester, the combined enrollment in general chemistry went over 150 students, the largest ever. There are now three lecture sections of Chem 220 with a total of seven laboratory and activity sections. We hired an adjunct professor to teach the third lecture section.

The enrollment in Jim Currie's Chem 310, Organic Chemistry, went over 50 students and he added a third laboratory section for the first time. Large enrollments continued in spring semester, 2000 with 20 students in Advanced In

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## Y2K Greetings From Murdock

As the calendar turns over, we are glad to be associated with this fine institution, now celebrating its 150th anniversary. There were many things to be thankful for when we celebrated Thanksgiving, 1999. Enrollments were up this past fall in the College of Arts and Sciences and our chemistry courses overflowed with students. Murdock Hall is a lively place and the chemistry department is thriving. Students come and go at all hours of the day (and night), working very hard and learning

a lot. Does this sound familiar?

One of the things we are most grateful for is our fine alumni, growing larger each year. We are proud of all that you have accomplished and we look forward to further news about your professional and personal lives. So keep us informed. Let us know about promotions, new jobs, publications, and other accomplishments and interesting experiences you have had. It's easy to contact us (see side-bar) and we are always glad to hear from you.

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organic Chemistry and over 22 in the combined junior/senior seminar.

Enrollment growth has strained the capacity of our facilities. We have stretched Murdock Hall to provide enough office and laboratory space to meet existing demands. Kevin Johnson's office was created from a stairwell. His laboratory was once the student research lab. Bill Jordan's laboratory is currently being used as an adjunct office. Tina Weast's office was originally the glassblowing lab. Instructional labs are close to full utilization with general chemistry labs being run simultaneously Tuesday morning and afternoon and with the organic lab now doing double duty as a general chemistry lab. We are finding ourselves seeking very creative solutions to meet needs. Serving both analytical and physical chemistry in one lab and finding sufficient laboratory space to accommodate all of the students who do independent research projects are especially challenging. We look forward to a cure for our growing pains in the form of addition of laboratory and office space in the not too distant future.

As part of its growth plan, the department expects to add a biochemist next fall and expand its biochemistry offerings.

### The Other Side of a Pacific Chemistry Major



Amanda Moore not only shows her prowess in chemistry but was the featured soloist in a recent Pacific Wind Ensemble performance. About nine of our current majors play in this fine musical group.



Kevin Johnson works with Amanda Moore on new experiment development

### Johnson Updates the General Chemistry Lab

The general chemistry laboratory has suddenly become much more colorful than any of our alumni will recall. As reported in the Summer '99 issue of *Distillations*, Kevin Johnson secured from the National Science Foundation a grant in the amount of \$27,850 to fund the computerization of the chemistry laboratory and activity sessions. As a consequence, the general chemistry lab is now equipped with 13 recently arrived, new generation DVD i-MACs. Kevin opted for the full spectrum of i-MAC colors so the lab now invokes a fruit salad of tangerine, strawberry, blueberry, grape and lime. The grant requires a matching contribution which is being provided by donations and by the university. Matching funds will be used to equip a second laboratory with computers.

Computers will be used for a multitude of purposes. Students will do molecular modeling using our CAChe system as well as spreadsheet calculations, and plotting and statistical analysis of experimental data. Additionally, the grant has made possible the purchase of data acquisition hardware and software for computerized collection of temperature, pH, gas pressure, conductivity and spectrophotometric data.

Of course, implementation of curriculum innovations requires countless

hours of planning and testing. To this end Kevin has made good use of an \$18,500 faculty development award from the university's Hewlett Foundation grant. Hewlett funding has provided release time for Kevin plus stipends for student assistance in developing the general chemistry curriculum. Sophomores Amanda Moore and Nipoon Dave have been working with Kevin. Hewlett funds have also been used for purchase of equipment for environmental chemistry measurements.

In addition to the integration of data acquisition software into the general chemistry lab, Kevin plans to run a pilot project with three laboratory sections during the spring semester, 2000. The special section will do project oriented experimentation in the areas of environmental and food chemistry. Students enrolled in this section will dedicate their laboratory efforts during the latter half of the semester to more open-ended experimentation than is typical of general chemistry laboratory work. Half of the students will be involved in water quality studies to determine the effect of non-point sources such as septic systems, nurseries, and other agricultural operations, on phosphate, nitrate and dissolved oxygen stream concentrations in nearby parts of the Tualatin basin. The other half will conduct experimentation into the effects of air exposure and heat on the stability of vitamin C, carotenoids and fats.

**Lyle Pritchett, '83**, is the Network Manager for the Desert Research Institute (DRI). DRI, located in Reno, is one of the world's largest environmental research organizations and an autonomous division of the University and Community College System of Nevada. Following completion of his B.S. in chemistry in 1983



Lyle worked at two Portland area analytical labs specializing in measuring and modeling atmospheric emissions.

He joined the Desert Research Institute twelve years ago as a specialist in environmental sampling and analysis, with an emphasis in air chemistry. His experience ranges from ambient and source sample collection using a variety of specialized samplers to management of two analytical laboratories. He has designed and built aerosol sampling equipment, including a programmable dual port sampler for ambient sampling, several versions of a dilution source sampler, a solar-powered ambient sampler, a road dust vacuum sampler, and a dust resuspension chamber. His sampling experience ranges from agricultural field burns in Mexico to natural gas flares in Canada to the active volcano in Hawaii. He has a number of publications to his credit in the area of atmospheric sampling and analysis.

Lyle completed an M.S. in Computer Science at the University of Nevada, Reno, in 1995. He has taught Fortran and C programming classes at the University of Nevada, Reno, and conducts regular in-house training sessions on Unix, network security, and Internet tools and capabilities. He was the primary author of two successful NSF grants totaling \$1.5 million to

construct a high-speed research network in Nevada. He still finds time to write software for data acquisition and image analysis for DRI's research projects.

He is married to Carolyn Hatcher Pritchett ('80). Their daughter Emily is a freshman in high school, and their son Jim is in 8th grade. They live just west of Reno on a one acre mini-farm and raise rabbits, ducks, chickens, and pigs, when the neighborhood bobcats and raccoons leave them alone.

**Clayton Gibbs, '99**, came to us from John Day, OR in '95 with a clear interest in chemical engineering, and that posed a bit of a problem for us. That's when we really started to think about the way we package our chemistry curriculum for our majors. To help him get where he wanted to go we started making adjustments to the major, and that led to the four emphases we now offer. For Clayton, it was Chemical Physics where we dropped all of the biology requirements and loaded on more mathematics and physics.

All evidence is that this paid off nicely for Clayton: immediately on graduation he landed a job in aerospace engineering. He has joined the Battery Technology Department at Space Systems/Loral in Palo Alto, CA. He is involved in the design, testing, and evaluation of satellite electrical power systems where he has plenty of opportunity to use his chemistry, math and physics. According to his supervisor, Dan Debicari, he's doing a great job down there. Congratulations, Clayton!

**Margret Schuch, '89**, is Lead Chemist, supervising the General Chemistry section, at Ohka America Inc., manufacturer of high purity chemicals (developer and photoresist) for the electronics industry. She moved to Ohka in Hillsboro, OR, 8 years ago from PEL, now North Creek Analytical. While a busy professional life leaves her little spare time, she continues to indulge an interest in the disappearing art of tatting (a method of making a type of knotted lace). Some of our alumni will remember her two young and active sons entertaining themselves in Murdock Hall. Joshua, now 20, has found a satisfying

career in the US Marine Corps and is currently stationed in Hawaii. John, 18, is in his senior year at Westview High in Beaverton. At this writing, Margret was on the verge of departing for a visit with Joshua in Hawaii. Hmm, Hawaii in January. Have a great time Margret!

**Mike Carter, '80**, is a Senior Etch Engineer at Intel. He is responsible for the test wafer recycling program including process development, equipment, operations and coordination of all activities related to the program. Mike joined Intel following graduation and has now been with the firm for 19 years. He was married last summer to Melissa Carter, a graduate of George Fox College with a master's degree in teaching. Melissa is teaching third grade in the Portland School System.

In his spare time, Mike indulges a "serious gardening addiction" tending to a half acre garden. He is also busy with a farmhouse remodeling project which involves wall removal, rewiring and everyone's favorite activity, sheet-rock installation. The farmhouse is also getting a 1600 ft<sup>2</sup> addition. Somehow, Mike also is able to get in a little fishing and spend time with his sons Chris, 15, and Nicholas, 9.

**Maureen Robinson, '97**, (formerly Maureen Helm) is an analytical chemist for Intel at the Ronler Acres site in Hillsboro. She has worked in the Process Analysis Lab since May, 1999, where she has specialized in GC/Mass spectroscopy. Her work activities will soon extend to use of ICP/Mass spec. and HPLC. She joined Intel as a Modular Technician following graduation in 1997. Maureen's husband, Guy Robinson, is an Operations Manager at Intel. They live in the Rock Creek area of Portland with Guy's 3 daughters and their 2 month old son Andrew (born December 3, 1999). Andrew and his mom are doing well and Maureen will soon be returning to the lab at Intel from maternity leave. Congratulations to the Robinsons!

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## Summer Research funded by the Murdock Trust

In August of 1998, Pacific University was the recipient of a start-up grant from the Murdock Charitable Trust to build a sustainable undergraduate research effort. The program encourages research which could culminate in publications in peer-reviewed journals. The grant provides \$173,000 in direct funding from Murdock over a two year period with a requirement for matching contributions from other sources. Funds are available for travel, publication, supplies, equipment and summer stipends for students and faculty.

During the summer of 1999, the Murdock grant funded the work of 4 students in the chemistry department.

Tom Veazey, a junior chemistry major, started research for the first time this past summer. He learned to use a potentiostat/galvanostat and techniques for preparing electrodes for study. His project will eventually lead to studies of the effect of cycling on electrode surfaces in lithium-ion batteries.

Brandy Moore, a junior chemistry major, also began research for the first time, performing computational studies of solvent decomposition in lithium-ion batteries. Brandy has also provided a vital contribution to a paper being prepared by Rick Whiteley, Jim Currie and Kevin Johnson for submission to *The Journal of the Electrochemical Society*.

Max Montano, a senior chemistry major working with Kevin Johnson, continued his study of electrochemically deposited metals on metal surfaces. With this project they are trying to identify the effects of existing microscopic surface structure on the morphology of electrochemically deposited metals. By the end of the summer Max had developed techniques he will use in his thesis research during the upcoming academic year.

Tricia Young, a junior chemistry major, worked for 11 weeks with Jim Currie on developing separation techniques to be used in the identification, isolation and characterization of plant compounds with antimicrobial activity. Their work

contributed to an interdisciplinary effort with Dr. Lisa Sardinia and her student coworkers in the biology department. Continuous extractions with organic solvents were done with dried plants from Costa Rica and Ecuador as well as from commercially available herbs traditionally used as medicines in this country. These included yarrow, Roman chamomile, chamomile and lavender. She used a high performance liquid chromatograph (HPLC), purchased with Murdock funds, to develop a profile of the essential oils and plant extracts. Attempts to find activity in the fractions from separated effluent were unsuccessful, presumably because of the very small sample size. Large scale column chromatography was used to separate myrrh and geranium oils into crude fractions which were evaluated with HPLC and gas chromatography.

## Murdock Conference, 1999

Each year, the Murdock Trust sponsors a conference sited at a campus in the Pacific Northwest. Pacific University was well represented at the Murdock Undergraduate Research Conference October 29 and 30 at Linfield College. Pacific contributed a total of 8 presentations at the conference including 4 in Chemistry, 1 in Biology/Chemistry and 3 in Physics. Following are presentations based on summer research within the Chemistry Department.

Tommy Veazey, Kevin E. Johnson and Richard V. Whiteley, "Characterization of the Lithium Cobalt Oxide Electrode for Lithium Ion Batteries"

Brandy Moore, Richard V. Whiteley, Kevin E. Johnson and James Currie, "Characterization of Electrolytes by Computer Modeling"

Max Montano and Kevin E. Johnson, "Surface Morphology of Electrochemical Deposition of Metals upon Metals"

Matt Seidel and James Currie, "Carbene Reactions with Unsaturated Small Rings"

Tricia Howlett (Glencoe High School), Tricia Young, Lisa Sardinia and James Currie, "The Effect of Myrrh on the Growth of Pathogenic Bacteria"

## Atomic Absorption Upgrade

The next time you visit the department, you'll notice some changes in the instrument room. Those who haven't stopped by in the past 10 years will find a liquid helium cooled superconducting NMR, a GC-mass spectrometer, and a new HPLC. Soon, inductively coupled plasma instrumentation will be making its debut in the department. Conspicuously missing is the Varian atomic absorption spectrometer which served the department for over 20 years. It was originally installed in a small room on the second floor of Warner Hall. Sitting in its place today, is a powerful graphite furnace instrument donated by Am Test through the effort of alumnus Scott Dickman. Scott is Am Test's supervisor of inorganic chemistry. The "new" instrument is up and working beautifully. No one is happier than Rick Whiteley who spent countless hours working on the Varian. Things just keep getting better. Thanks Scott!



Scott Dickman at work Am Test

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Remember this is *your* newsletter. We look forward to hearing from you so we can keep your fellow alums up to date on the interesting things you are all doing.

**The Pacific University  
Chemistry Department**