
UO CHEMISTRY NEWS

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GREEN Chemistry

Why the world is watching



"You can't focus on just your science; you have to focus on the repercussions of what you're doing," says UO chemistry senior Austin Hayes. As a student who's completed the UO's new Green Organic Chemistry Lab, Hayes is part of a pioneering movement to recast the image of a twenty-first-century chemist as an environmental ambassador. The lab, the first instructional laboratory in the world to focus on green chemistry, has captured the attention of the White House and the Environmental Protection Agency.

"It is essential to achieving sustainability that we educate the next generation of molecular scientists to understand the power they have in designing a safer world," says Paul Anastas, Senior Policy Analyst at the White House Office of Science and Technology Policy - and the recognized father of green chemistry.

That is precisely the long-term goal of green chemistry at Oregon, says Professor Jim Hutchison, who designed the instructional lab with Professor Ken Doxsee and a team of graduate students. Students can become "green ambassadors" and help change the way chemistry is done beyond UO laboratories, he says.

"We're giving students a window into what's going to happen in the future."

"The products we create with organic chemistry are everywhere and offer great advantages to society. But the amount of waste generated by the manufacturing process is enormous," says Hutchison.

As the impact of these processes on public health and the environment becomes apparent, chemists in industry and academia are looking for ways to reduce hazards while maintaining a lifestyle most of us are unwilling to give up. U.S. industry generated over 40 million tons of hazardous waste in 1997, according to the most recent data collected by the EPA. "There are more and more regulations on chemicals and waste for good reason," says Doxsee.

Traditional organic labs use large quantities of toxic chemicals and solvents to perform reactions, exposing students to hazard and negatively impacting the environment. Today, most instructional labs take a "microscale" approach, using smaller amounts of reactants to minimize hazard and reduce waste.

Green chemistry methods seek to reduce the potential for hazard by finding creative ways to minimize human exposure and environmental impact without stifling scientific progress. Because green chemistry focuses on using environmentally benign chemicals, students can perform experiments using larger quantities (macroscale) typical of industrial and research settings, with less environmental hazard. "We've been able to move away from microscale to *reality*," says Marvin

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Warner, a graduate student and teaching assistant in the lab.

Graduate students assisted with teaching the class and helped develop many of the experiments. Student Scott Reed researched experiments to find those that would be appropriate for an instructional lab setting. In addition to identifying new "green" experiments, he worked to reduce the reaction time to fit the allotted class time. His green experiment to synthesize adipic acid will be published in the *Journal of Chemical Education* this December.

In lab, students substitute less toxic solvents and reagents to learn the same skills and perform the same reactions they would in a traditional organic lab. Waste is minimized by recycling the reaction products into future experiments.

Industry should welcome students of green chemistry as they struggle to keep ahead of regulations and make environmentally-aware consumers and investors happy. Just visit any industrial website these days and it's clear that a strong environmental track record is something worth bragging about. "It's the right thing to do," says Dave Stangis, Environmental, Health and Safety External Affairs Manager for Intel.

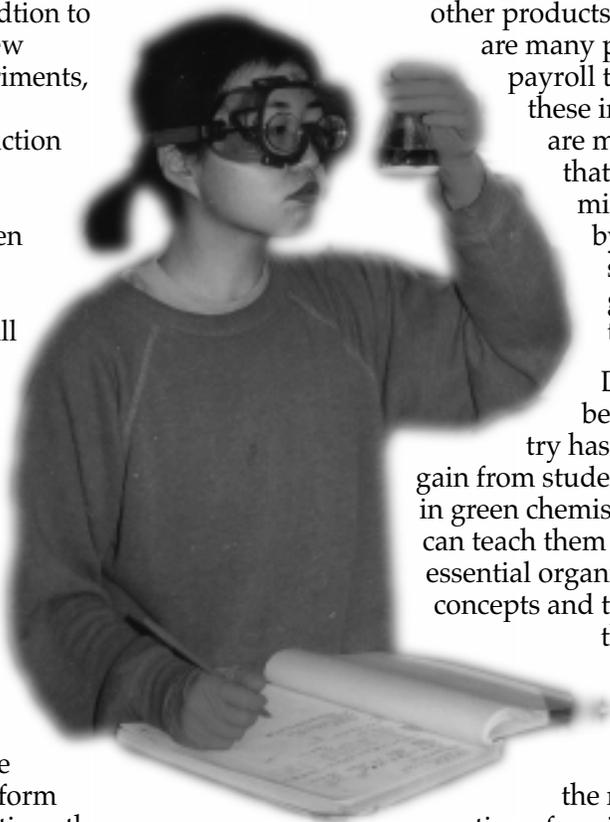
Industry is motivated to pursue greener pastures. The EPA assessed over \$183 million in civil and criminal penalties in 1998 enforcing

environmental laws and regulations.

Like many manufacturers, Intel has focused attention on looking for solvent substitutes that are safer; decreasing the amount of water they use; phasing out harmful chemicals; and designing processes that allow for recycling the byproducts into other products. And there are many people on the payroll to make sure these improvements are made - jobs that one day might be filled by today's students of green chemistry.

Doxsee believes industry has plenty to gain from students schooled in green chemistry. "If we can teach them all the essential organic chemistry concepts and techniques that they need and at the same time prepare them to be the next generation of environmentally-conscious chemists, then what's not to like?," he says. The department plans to turn all organic chemistry labs "green" by fall 2001.

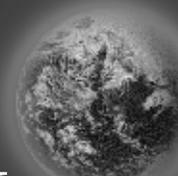
"The push toward green chemistry is big," says Warner. "We're giving students a window into what's going to happen in the future."



NEW GREEN CHEMISTRY LAB SET TO OPEN NEXT FALL

The UO Chemistry Department plans to begin construction of a state-of-the-art green organic laboratory this spring. Work on the new 2,500 square foot laboratory should be completed in time for classes starting fall 2001, when the department plans to convert all organic labs to the "green" format.

The new facility will be located in the current Chemstores, on the first floor of Klamath. Chemstores will move into a portion of the student shops, which will also be renovated. In conjunction with the new green organic lab, the department plans to create a 1000-square-foot undergraduate equipment laboratory to house a growing collection of state-of-the-art analytical equipment. The estimated actual cost of the project is \$600,000. The department has raised \$250,000 so far.



**LEARN
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[www.uoregon.edu/
~hutchlab/greenchem](http://www.uoregon.edu/~hutchlab/greenchem)

From THE DEPARTMENT HEAD

Dear Friends & Colleagues,

This has been a year of dramatic change for the department. We have several laboratory renovations in progress, we've added a new faculty member to our ranks, and by all accounts, we're the first chemistry department in the world to have an undergraduate instructional laboratory in green organic chemistry. In addition, the industrial internship program begun by the Materials Science Institute (with help from chemistry and physics) has moved out of the experimental stage and can now be declared a success. It is with the support of alumni like you that some of these changes have been possible.

Thanks to the generous help of John Natt (class of 1964), we have been able to update and remodel the Honors General Chemistry Laboratory. It will now be called the Richard Noyes and Donald Swinehart Instructional Laboratory for Honors Chemistry. Honors General Chemistry has always been an important part of our undergraduate program and has often served to interest some of the best students in pursuing a major in chemistry. The upgrade includes new space, new experiments and new laboratory equipment.

After two successful years (and rave reviews from students) with our green organic instructional laboratory, we are in the later stages of constructing a new laboratory for this innovative approach to organic chemistry. Jim Hutchison and Ken Doxsee have been developing the green curriculum over the past three years. The concept of green chemistry involves substituting more benign solvents and reagents for the toxic chemicals traditionally used in the organic labs. Students learn the same organic chemistry concepts using less toxic chemicals. The green approach is more environmentally friendly and is safer for students and teachers. This innovative instructional lab has been getting national recognition, particularly from the EPA and the White House.

The new Green Laboratory will occupy the space formerly used by Chemistry Stores (now Science Stores) and Science Stores will contract and move to remodeled space. We hope to have the new laboratory operating in about a year. It will be a modern, state-of-the-art facility ideally suited to teaching the Green Organic Chemistry curriculum and will be a showcase for demonstrating the excellence of undergraduate education in chemistry at the University of Oregon.

This year we welcomed our newest faculty member, Dr. Beatrice Darimont. Bea's research is focused on nuclear receptors. She combines structural, biochemical and cell biological approaches to the study of this important family of proteins that are central to the mechanisms of action of cortisone, thyroid hormone and progesterone. She has moved into her remodeled space in the Institute of Molecular Biology and has already assembled an impressive group of co-workers. There are plans to recruit an additional three new faculty members this year in biochemistry, organic/inorganic chemistry and materials science.

The success of our new faculty (as well as the established faculty) depends on our ability to recruit good graduate students to the Department. This year's group of entering graduate students is the largest, best prepared and most diverse of any in recent memory. By a combination of research laboratory rotations, and industrial internships for some, we have encouraged them to explore the broad range of science available in their first year of graduate study. They have all jumped into their studies with enthusiasm and we expect great things from them in the years ahead.

Sincerely, Rick Dahlquist



Photo by Jack Liu

The Ralph Barnhard Story

After 34 Years, Assistant Department Head Retires



"If this is education, I'm getting the heck out," he remembers thinking.

So began Ralph Barnhard's long love affair with teaching. It was 1959 and Barnhard had landed his first teaching job after graduating from Otterbein College in Ohio.

Collinwood High in the inner city of Cleveland was a lesson in frustration. Classes were large, academic standards did not exist, and students were accustomed to passing, regardless of how well they performed in their classes. If a teacher did not give a passing grade, the administration would pass them because it couldn't afford to hold them back.

Feeling ineffective, he left and found a job "up the hill" at Cleveland Heights High School, his father's old stomping grounds. Clyde "Barney" Barnhard taught shop at the school for 35 years and was well respected by peers and students alike. The school had better funding and boasted that over 90 percent of its graduates went on to college. Barnhard thought he had *arrived* - until the day he walked into the men's lounge and someone said, "Look, it's Barney's little boy."

So he fled. "The day my contract expired, we were driving through Toledo, Ohio headed west. Oregon was as far as I could drive," Barnhard recalls. He and his wife LaVern settled into Eugene and Barnhard began the master's program at the University of Oregon. It

was 1963 and Virgil Boekelheide was his advisor.

Barnhard finished his degree and accepted a job at Foothill Junior College in the bay area. Two years later, Boekelheide called and offered

his early days at Collinwood. He felt he was a terrible teacher and remembers Department Head Bob Mazo taking the flack for his poor performance. Of course, Mazo doesn't remember it that way.

But Barnhard remembers the pain of it all, now a distant memory. Thirty-four years later, one is hard-pressed to find a single student or peer who isn't impressed with his teaching abilities and the allegiance of dotting students. "With Ralph, you definitely get the feeling that students are his primary concern," says Greg Byrd, who was introduced to Ralph as a freshman in general chemistry and met him for lunch for years afterward. Barnhard's enthusiasm for chemistry and his open-door policy at home and work made a positive impression on Byrd and other students.

Pilar Bradshaw, now a pediatrician at PeaceHealth in Eugene, credits him with making chemistry fun. "He always had a bounce in his step and a positive attitude and I thought it rubbed off on his students."

"He was really a great cheerleader for undergraduates and he celebrated every little victory for each of us," she says. She remembers

the first year the Goldwater Scholarship was offered and Barnhard nominated her for it. She was surprised when she won (Barnhard wasn't). "I remember walking into his office and he was so excited. He



Ralph & LaVern Barnhard somewhere off campus.

him a job overseeing department administration, which eventually led to a teaching assignment - and to his job as Assistant Department Head.

Unfortunately, his first years back at Oregon were almost as frustrating as

jumped up from his desk and gave me this huge high-five." It didn't really matter if you were the one who got the high-five or not, says Bradshaw - you were happy for whoever did. "He just brought everyone together."

In his classroom, lectures are interesting and animated - and he got students' attention on the first day of class. Byrd remembers Barnhard walking around class, mike in hand, as he gave a lecture, making it difficult to catch up on your sleep. And *nobody* sleeps during the first day of class. Barnhard would fill a balloon with hydrogen, turn off the lights and light it up. "He always started off class with a big bang," says Byrd. "I think that sort of set the tone for the whole term."

After 34 years, one would expect Ralph would be ready to move on. And in many ways, he is. He and LaVern have big travel plans.

They're planning a trip to the Galapagos Islands next winter, with Australia and New Zealand soon after. There's work to be done on their new custom home, and more time to spend with the kids and grandkids.

But he'll miss it, too. "It will be nice to get up and read the newspaper, but I'll miss the daily contact with people." By all accounts, working with people was something Barnhard made into an art.

At his retirement party, everyone was gushing about him so much that Barnhard lost his train of thought - and his composure. He says he feels bad that he never thanked the staff he worked with every day, as he'd planned to do at the party. "I'm embarrassed that I didn't do that," he says. This from a man who remembered every holiday and absence with gifts. He found endless

excuses to give, a habit that endeared him to his coworkers - carved animals when he came back from Safari in Africa; maple syrup when he came back from Canada, Poinsettias for Christmas; flowers for Secretary's Day; chocolate for Valentine's Day.

"This has been a wonderful place; no, this has been a terrific place to live and work. I know it may sound trite, but I do love this place, and I relish the fact that I have worked for the Department of Chemistry and the University of Oregon." Even though officially retired, Barnhard says he's looking forward to teaching again this fall and winter, without the distraction of administrative duties. He'll be working under the university's 600-hour policy. But all good things must come to an end and Barnhard feels ready to move on to new commitments and challenges. "Change can be good," he says.

- L. Ritzow

A FAREWELL FROM THE CLASS OF 2000

This speech was presented by senior Jana Mooster (at left in photo) at Graduation this year. Ben Paxton and Greg Byrd contributed.



On behalf of the graduating class, we would now like to take a few moments to acknowledge the contributions of a very special member of our faculty, who is retiring this year, Mr. Ralph Barnhard.

Ralph has been our assistant department head for 34 years. Throughout this time, Ralph's service to the University of Oregon has been characterized by his willingness to give his time and energy to students.

For many of us, our first introduction to Ralph and to the chemistry program occurred in the general chemistry class. Ralph started his first lecture by exploding a hydrogen balloon. This got our attention right away, and Ralph was adept at keeping it for the rest of the year. It was obvious to us that Ralph was excited about teaching chemistry and was interested in developing a relation-

ship with the students. He made his classes interactive - later on he even let us help with the demonstrations. He encouraged students to come to office hours, where he learned our names and worked on a more personal basis with us. For these reasons, students have voted Ralph "Professor of the Month" at the University of Oregon three times, and he received the Burlington Foundation Award for teaching excellence.

Ralph has also influenced our lives as chemistry majors as our advisor. Whenever we had a question, we knew Ralph would either answer it or point us in the right direction. He was always available and willing to give us his time. At times when we were questioning our abilities or worried about the future, Ralph was

there to encourage us. Not only was he the authoritative source when it came to university policy and requirements, he encouraged us to broaden our horizons. He was sure to mention upcoming campus and community events, such as concerts and basketball games. He also encouraged us to participate in study abroad programs.

Ralph was instrumental to the department for helping student groups and outreach programs. For example, Ralph helped the Student Affiliates of the American Chemical Society organize an undergraduate research symposium, put on demonstrations, and give tours of the department to high school students. Additionally, Ralph has been very involved in the Freshman Interest Groups, even opening his home to students for wild raging parties. Or maybe it was just a barbeque.

Ralph is an all-around great guy and shows that he really cares about students. He has been a friendly face in the department for years, and we are sorry to see him go.

Della Roy

Biomaterials & Cement Research

Winners of the Alumni Achievement Award in Chemistry are a select group chosen in recognition of professional and personal achievements that exemplify the Oregon spirit and tradition of excellence. The College of Arts and Sciences established the award in 1989. Della Roy will receive her award at the College of Arts and Sciences Profiles in Achievement Banquet on Friday, November 10, 2000.

It's been 53 years since Della Roy finished her bachelor's degree in chemistry at the University of Oregon. In that time Roy has built a career in materials science and engineering at Penn State that would exhaust most mortals. She has authored 400 publications and four patents, edited eight books, founded a research magazine, mentored 36 graduate students, and chaired numerous conferences and committees - and those are just the highlights. "Retired" since 1992, Roy still puts in a full day at the office whenever she is in town.

"One is stimulated by activity," says Roy. "I just find it energizing." Even while a top student at the UO, Roy was busy with band, piano lessons, hiking, and intramural sports, in addition to her chemistry studies. Roy graduated in 1947, with all the honors - magna cum laude, Phi Beta Kappa, and Sigma Xi. "I had a very heavy academic program and yet I managed to find time to do some of the other activities I liked to do."

Fortunately for science, research is one of the things Della Roy greatly enjoys. And so it's been - throughout her long and illustrious career as a leader in cement and biomaterials. Elected to the prestigious National Academy of Engineering in 1987, Roy has focused much of her research on gaining a fundamental

understanding of cement and its numerous applications. Her synthesis of low-porosity cement has been used to develop nuclear waste storage, and her research on ultra high-strength cement has influenced other researchers and led to the development of new products.



"Because cement is so widely used, even small improvements have a very big impact on society."

One of her favorite projects involves the synthesis of biomaterials used for dental bone implants. She and colleagues at Penn State worked for 2-3 years with little financial support to develop a synthetic porous material to be used for dental implant restoration. The research led to a patent that has earned Penn State a nice sum in royalties. "It was finally something that was useful for people," she says.

The bulk of Roy's research has focused on cement. While cement research may seem unglamorous at first glance, concrete is the most widely used material in the world in terms of volume and so advances in cement make a big difference, says Roy. "Because cement is so widely

used, even small improvements have a very big impact on society." If highways and buildings last longer, we produce less waste as a society and it benefits everyone.

In 1971, Roy founded the journal *Cement and Concrete Research*, now recognized as a leading voice in the field. Roy decided to found the international journal for materials scientists and engineers when she realized there wasn't an adequate forum for the science. The magazine is published twelve months a year and Roy has been the chief editor since its inception.

Roy believes the future of cement may be tied to waste. She is currently working to find ways to use fly ash, a by-product of coal generation in power plants, as a component of cement. "There's a great opportunity in cement research on the use of

waste materials in cement and concrete," says Roy. It's an area of research that can have enormous societal benefits

down the road - an area some of her students may pursue in the future. Her most recent Ph.D. student graduates this year. "I feel an enormous gratitude to my instructors, professors at U of O. If I have done half as well for my graduate students, I consider that a great plus," she wrote.

But whether people outside the cement community know about her great contributions to society or not, Roy's name will go down in history - as Dellaite. She and husband Rustum have minerals named in their honor. "As far as I know, we were the first husband and wife team to have minerals named after them," she says.

- L. Ritzow

Richard Field

Oscillating Reactions, Atmospheric Chemistry & the 60's

Dick Field arrived in Eugene with his wife Judith in the late summer of 1968, planning to spend one year working as a postdoc for Dick Noyes. He had just completed his Ph.D. at the University of Rhode Island and decided to see what life was like out west working with a prominent scientist in an exciting department. "It was a wonderful opportunity for us, but I fully expected to spend only one year at UO and then go back to New England and spend my career teaching at some small catholic college in New England," Field reflected recently.

But it was, after all, 1968. Change was in the air. "When we drove across the country to Oregon that summer, we listened to the Democratic National Convention on the radio while camped in South Dakota. Just before we left Eugene in '74, we were on the coast - and we heard on the radio that Richard Nixon had resigned," says Field. "So our time in Eugene was intensely volatile socially and politically - and full of exciting science."

While the war raged in Vietnam, movements for peace, civil rights, and the environment swept across college campuses and the rest of the nation. Martin Luther King Jr. was assassinated and four students died at Kent State; Neil Armstrong landed on the moon, and the masses turned out for Woodstock and Earth Day. And in the chemistry department, there was the science. Field worked on the Belousov-Zhabotinsky reaction and the Oregonator.

Even a young postdoc in chemistry was not immune to what went on outside the lab in those exciting and volatile years. The convention the young Dick Field listened to on his car radio affected him more than he

could have known at the time. John Froines, a brand-new assistant professor in the department, was indicted that fall on charges of conspiring to incite the riots at the Chicago Convention, along with seven other activists. Though he was eventually acquitted, Froines' involvement in the now-



Even a young postdoc in chemistry was not immune to what went on outside the lab in those exciting and volatile years.

famous Chicago-8 Conspiracy Trial put the national spotlight on Eugene and the University - and changed the course of Dick Field's life forever.

Froines left the UO in 1970 and moved to Vermont where he eventually became director of that state's Occupational Health and Safety Office. He later worked in the Carter Administration, and is now faculty at UCLA in the School of Public Health.

Froines' departure left a void in the teaching assignments at UO, and Field was asked to fill in. He did so - as a visiting assistant professor - for the next three years, effectively extending his stay in Eugene - and his work with Noyes. Their work was

nothing if not revolutionary. The two published five seminal papers on oscillating chemical reactions that became the foundation for future research in this area throughout the world. Dick Field never went back to that small school in New England.

When Field finally left the UO in 1974 and began his own academic career at the University of Montana, he continued to work on oscillating reactions. But in recent years, he's moved on to new research in atmospheric chemistry, applying the skills and insights collected from his previous work. "All this chemistry is fundamentally related to the work we did on oscillating reactions many years ago," says Field.

Field was attracted to atmospheric chemistry, in part, to affect public policy. Working in collaboration with the Forest Service and the Intermountain Fire Sciences Laboratory in Missoula, Field now is studying the affect of fire and other chemical influences on the atmosphere. He hopes to understand the chemistry well enough

to assist regulators who make decisions on the best course of action to take in order to improve air quality. While he's better known for his work on oscillating reactions, the atmospheric work is perhaps more satisfying personally because it is a new area of research, established late in his career. "It's also work in keeping with Dick Noyes' commitment to the public weal," he says.

Even after 25 years at Montana, Dick still has wonderful memories of his years and old friends at Oregon. "Missoula, Montana was as close to Eugene as I could get in a Ph.D.-granting institution," he says. And the chemistry? "The chemistry still is great fun."

- L Ritzow

Department Welcomes *New Assistant Department Head*

Dr. Julie Haack has replaced Ralph Barnhard as the new Assistant Department Head. Haack is returning to the University after gaining administrative and research experience in the biotech industry.

Haack most recently worked as Director of Product Development and Design for Nutri-Logics, Inc., a biotech start-up company dedicated to designing nutritional supplements for cancer prevention. She was responsible for coordinating research to develop dietary supplements that could reduce an individual's risk for cancer.

Haack wants to use the administrative experience that she gained in industry to facilitate the development of new educational programs within the department. "Our faculty are committed to their research and teaching. One of my goals is to use my project management experience to relieve the administrative burden, so that faculty are free to focus on their research and educational programs." In addition to her administrative activities, Haack will also be responsible for student advising. "The job market has changed dramatically with many

new career opportunities available for chemistry and biochemistry graduates. I think that my broad research background and employment experiences in both industry and academia will help me to effectively advise students as they develop their career plans."

Haack began her own career in science at the UofO, graduating with a B.S. in chemistry in 1986. She received her Ph.D. in biology at the University of Utah, followed by a postdoc in pharmacology at the University of North Carolina at Chapel Hill. But Haack was soon back at the UO as Adjunct Assistant Professor and Faculty Fellow in chemistry, where she honed her teaching skills in the upper division biochemistry course.

Haack also spent time in the labs of Rick Dahlquist and Carlos Bustamante as a Howard Hughes Research Associate before working as Director of Research for Emerald Diagnostics, a Eugene start-up company specializing in fine particle and diagnostic technology development and manufacturing for the life sciences.



Because of her former ties with the University, Haack was aware of many new programs being developed by faculty. "I thought that it would be exciting to participate in the implementation of nationally recognized programs during the early stages of development." Haack is already contributing to the green chemistry project by developing a laboratory database that will enable instructors to identify "green" labs that illustrate specific chemical concepts.

In addition to her administrative duties, Haack will also be teaching general chemistry this year with Ralph Barnhard to "learn the ropes." "Although I have some big shoes to fill, I want to continue to provide the personal touch that Ralph is famous for." "I'm looking forward to working with everyone in the department," she said.

BOOK DONATION RECALLS EARLIER DAYS

Alumnus Bruno Morosin, B.A. '56, has donated his chemistry books from his undergraduate years at Oregon to the department. They are currently on display in the Willamette Hall Atrium. The nine 50's-era books *College Chemistry* by Linus Pauling, and *German for the Scientist* by Peter F. Weiner.

Morosin, born and raised in Klamath Falls, Oregon, received his Ph.D. in physical chemistry in 1959 from the University of Washington in Seattle.

He later worked for Hughes Research Laboratory in Culver City and Malibu, California for one year before accepting a job with Sandia Laboratories, a Lockheed Martin company in Albuquerque, New Mexico. Sandia serves as a national security laboratory operated for the Department of Energy. Sandia designs all the non-nuclear components for U.S. nuclear weapons. The company also conducts energy research and special projects surrounding national security threats.

Morosin started as a staff member in 1961 and soon became a supervisor of the chemical physics division. During his 36 years with the company, he served as supervisor for five different divisions including electronic properties in solids; structural phenomena solids, solid state materials; and shock wave and explosive physics. He retired in 1997 and still serves as a consultant.

His gift of literature will be a permanent part of the historic collection of the UO chemistry department.

- L. Ritzow

Reflections

AN UNDERGRADUATE CHEM MAJOR'S PERSPECTIVE

These recollections are by John J. Natt, B.S. 1964. After graduating from the UO, he received an MS in physical chemistry from the University of Washington in 1966. After a year as a crystallographic engineer with Texas Instruments, John went on to UC-Berkeley, where he received an MBA in applied economics in 1969. John began his forest products industry career at Weyerhaeuser in Tacoma in 1969. In 1974 he joined Crown Zellerbach in San Francisco, where he rose to the position of Director of Planning and Administration for Timber and Wood Products. In 1985 he started Clear Vision Associates in San Rafael, CA, where he is Managing Director. Clear Vision does forecasting and analysis of the forest products industry, serving clients in the U.S., Canada, New Zealand and Sweden.

In 1960 I entered the University of Oregon as a freshman. I decided to major in chemistry because I had a positive experience in high school and was concerned about our country's scientific manpower resources after the Russians launched Sputnik in 1958. My dad had attended Oregon and my older brother was a sophomore at Oregon. I was on the front end of the post-war baby boom and all of America's universities were bursting at the seams with students. At Oregon, this demographic situation was compounded by a state requirement that any Oregon high school graduate with a 2.0 GPA had to be admitted. I was an out-of-state student. Thus, most freshman classes were overcrowded. However, our professor assured us that by year-end, two out of three of us would be gone through academic dismissals. They were right - you never could tell which of your friends and associates would be around the next quarter.

In General Chemistry, I felt like one of the faceless masses and made no connection with my harried chem

professors. I made the freshman basketball team fall quarter but had to give it up winter quarter because practice conflicted with my chem labs. During my short basketball career, I got to play with Steve Jones (later a Portland Trailblazer) and against Oregon State and Mel Counts (later a Los Angeles Laker).

In the 1960s, all male students at land grant colleges (this was true at Oregon as well) were required to take ROTC their first two years. Winter quarter my freshman year I had a scheduling conflict between



John J. Natt, 1960's

ROTC and my first-year German class. The military science department would not bend and I was forced to miss my German lecture once a week. My German grade suffered and my attitude toward ROTC shifted to the negative side for the rest of my two-year requirement. I should probably mention here that I came from a military family - my dad had been a career officer in the U.S. Air Force for 30 years.

I also joined a fraternity my freshman year (the same one my brother, Ted, was in). Since I was the only chem major in my fraternity, I was definitely an odd "duck." The only fraternity brothers taking my lower division courses were pre-med majors. They were all terribly

worried about passing Organic Chemistry their sophomore year.

Organic Chemistry turned out to be your basic nightmare. There must have been 200 students in room 150 Science that year. Professors Dolby and Boekelheide took one look at the class and just looked discouraged. So passed another year of being one of the faceless masses. The casualty rate approximated D-Day. All pre-mediers in my fraternity taking that class were washed out. I made it through but again without really connecting with my chemistry professors. The central problem without a doubt was class size. Just so you do not think my years as a lower classman were too bleak, I did have very positive experiences in Calculus, first and second year German, and Shakespeare. General Physics, unfortunately, was a replay of the faceless masses scene.

Fortunately, in my junior year, things started to pick up. I liked p-chem and connected with Donald Swinehart and Chuck Klofenstein (who was my p-chem lab TA). Swinehart became my advisor for my senior problem and I started smoking a pipe like Don. In fact, most p-chem people smoked pipes. I think it went with the territory. My senior year I connected with Dick Noyes for whom I developed enormous respect. Dick and Don got me charged up enough about p-chem to make me want to go on to graduate school and were kind enough to recommend me to the University of Washington. Thus began a new episode in my formal education that may well have saved my life - but that is another story. In reflecting back over my undergraduate years at Oregon, I wish I would have had a chance to get to know all of my professors better, and in particular, my chem profs. I also re-affirmed academically what I already knew athletically from basketball: if you want it badly enough and you are persistent and willing to put in the time, you can prevail.

Research for Undergraduates

REU Program Exceeds Expectations

For students of chemistry and physics, it's hard to pass up. "For ten weeks this summer, you can do cutting-edge research at a major university in the beautiful Willamette Valley (outdoor adventure *heaven*). You'll have the opportunity to work alongside graduate students and faculty using state-of-the-art instruments during the week, and take off for the mountains and streams on the weekends. And best of all, we'll pay you to do it!"

One of the oldest summer research programs for undergraduates in the country, Oregon's Research Experience for Undergraduates (REU) continues to receive rave reviews from students and the National Science Foundation 14 years after it started - for obvious reasons. It's an exceptional program and an exceptionally good time.

"It's a good opportunity to do some different research and gain some new experience...And a chance to get out of the city," says Jemma Juliani, a 21-year-old senior from Duquesne University in Pittsburgh. Juliani spends most days shadowing graduate student Michelle Knowles in the Marcus lab studying the structure function of mitochondria with lasers and microscopes. "I like the one-on-one interaction I get," says Juliani.

On the weekends, she joins her REU pals for local and regional adventures: bowling, a trip to Crater Lake, a game of miniature golf, a visit to the local ice cream parlor, or any-

thing else that suits the group's fancy. Program Director Geri Richmond believes time spent on extracurricular activities is just as important as what they're doing in the lab and she's helped facilitate this by providing vehicles for the students to take out on the weekends. "They become life-long friends," she says.



REU Student Danielle Brinker in the Page Lab.

Coming from a school with no graduate program, Vickaryous has received a lot of insight into a typical day in the life of a graduate student.

"We have a good comeraderie going," notes Jake Vickaryous, a senior from George Fox University in Portland. Students live in campus dormitories and share three meals a day. Accommodations and meals are provided free of charge by the university. Due to the close proximity, students often spend time swapping stories about their forays into

research in their respective labs. Vickaryous is working in the Page lab, growing monolayers on silicon wafers to maximize the nonlinear properties.

Coming from a school with no graduate program, Vickaryous has received a lot of insight into a typical day in the life of a graduate student.

"It takes the mystery out of it," he said. And it might help him actually get into graduate school, says Professor Mark Lonergan, chair of the graduate selection committee and a former REU student himself. "We take a meaningful exposure to undergraduate research as an excellent indicator of success in graduate school."

The REU program is an ideal way to get that exposure. "Students are made part of real research projects. They're not just spectators or support staff; they have the opportunity to be as involved in research projects as any graduate student," says Lonergan. And many are that involved. Numerous publications have resulted from the research undergraduates have done in the summers.

For Betsy Raymond, now a graduate student in the Richmond lab, the program exposed her to research beyond what was available at her small four-year college in Washington. "When I first went to Whitman I knew I was going to do science, but the thought of getting a Ph.D. had never crossed my mind," says Raymond. The REU program gave her an accurate picture of what graduate school was

Continued on Page 11

Lab Renovation Honors Chemistry Faculty

John Natt Donates \$100,000 to make it happen

John J. Natt (B.S., 1964), Managing Director of Clear Vision Associates in San Rafael, CA, has made a \$100,000 gift to the Chemistry Department to renovate the Honors Chemistry Teaching Laboratory. The renovation is now complete and ready for the Fall Term 2000 undergraduates. At John Natt's request, the newly renovated lab is named the Richard Noyes and Donald Swinehart Instructional Laboratory for Honors Chemistry. The new facilities are in 169 Onyx bridge: a brightly lit room with modern furnishings and an open design promoting visibility. The six fume hoods have been recently renovated, and utilities appropriate to a modern chemistry lab have been installed.

Each student will have his/her own modern computer and data acquisition system, complete with Ethernet connection. The computers will be housed on workstation carts which can be quickly moved out of the way when the lab needs to be used for



The new Instructional Laboratory for Honors Chemistry is named in honor of Richard Noyes and Don Swinehart.

“wet” chemistry. Each student will have access to a vacuum line, replacing the antiquated system of aspirators. Emphasis can be placed on teaching students modern methods of chemistry and acquainting them with modern instrumentation. The new facility provides a pleasant learning environment for students and faculty alike. The new facility replaces the old Honors General Chemistry lab

in B83 Klamath, a windowless room in the basement of Klamath Hall with furnishings transferred from Science (now Pacific Hall) in 1968. The old cabinets and fume hoods date back to the 1950's. They were typical of undergraduate labs a half century ago: stone top benches divided by utility lines at eye level and a “drainage ditch” below, and have remained largely unchanged since they were in-

stalled. A dedication ceremony for the new laboratory will be held in November 10, 2000. For more on Natt, see the *Reflections* section of this newsletter.

- John Hardwick



John J. Natt



*Donald F. Swinehart
1917-1993*



*Richard M. Noyes
1919-1997*

REU: Continued from Page 10

all about and eventually led her to apply to Oregon to work on her doctorate.

Richmond, who is responsible for initiating the program and keeping it funded, believes the program is successful for many reasons, including the commitment of faculty, the quality of the students, and some innovations unique to the UO.

“The quality of the students is very high for our program because they have to be strong in both chemistry and physics,” says Richmond. Ninety percent of Oregon REU

students plan to go on to graduate school and the average GPA is 3.5. Perhaps because of that, Richmond has never had a problem getting faculty to volunteer to mentor students in their labs. And sometimes there's an additional payoff when students like Raymond decide to come back for graduate school. “It's certainly not the motivation behind doing it, but it's nice,” says Richmond.

The Oregon program hosts weekly lunches where students meet with faculty and discuss their projects. At

the end of the summer, they give a talk to the group about what they've accomplished in lab. The presentations are filmed and each student gets a copy to take home. So, along with the memories of research successes and failures, late-night movies, and weekend adventures in the Cascades; they take home a permanent record of how well they give oral presentations in front of a group. A group made up of all the friends they made that summer and the colleagues they'll have in science in the future.

- L. Ritzow

News from All Over

1940s

Roy Dale Lint, BA '49, spent forty years with Unocal Corporation and retired in '92.

George Alkire, M.S. '44, went on to earn a Ph.D. in chemistry at Ohio State after leaving the UO. He and his wife worked on the Manhattan Project in Oak Ridge, Tennessee until the end of the war. Over the years, Alkire has worked as a scientist/manager for General Electric, Battelle Memorial Institute, and Westinghouse Electric (a contractor for the Department of Energy) at its Richland, Washington operations. *You can read Alkire's reflections on page 19.*

Della Martin Roy, B.S. '47 is co-recipient of the 2000 Alumni Achievement Award in Chemistry. *See story pg. 6.*

1950s

Myer Horowitz, Ph.D. '52 with Frank Reithel, is retired and living in Cincinnati, Ohio. He is a clinical chemist.

Jerry Christian, B.S. 1959, was named the inaugural Distinguished Scientist/Engineer by the Idaho Academy of Science in the first of an annual competitive award. He has made important contributions in the fields of aqueous fluoride chemistry and technology, nuclear fuel processing technologies, high temperature ruthenium chemistry, solvent extraction separations chemistry, radioactive incinerator off-gas treatment, radioactive airborne waste management technologies, beneficial use of radioactively contaminated metals, oxidation of metals, and technetium-molybdenum separations processes for medical isotope production.

He is currently Scientific Fellow at the Idaho National Engineering and Environmental Laboratory in Idaho Falls, Idaho and an Affiliate Professor of Chemistry at the University of Idaho.

Bruno Morosin, B.A. '56, received his Ph.D. at the University of Washington in Seattle after leaving the UO. He worked briefly at Hughes Research Laboratory in California before beginning a career at Sandia Laboratories, a national security

lab that designs non-nuclear components for nuclear weapons. Morosin began as a basic researcher in '61 and became a supervisor in '67. He worked in several divisions, including chemical physics, electronic properties in solids, and shock wave and explosive physics. In 1990 he became a Distinguished Member of the Technical Staff for basic and applied research. He retired in '97, but continues to work as a consultant for the company. Morosin has 340 publications to his credit. He recently donated his UO chemistry textbooks to the department. They are currently on display in the atrium of Willamette Hall.

Marion Hill, B.A. '48, M.A. '50 with Haymann, returned to campus in June for the commencement exercises. *See his speech on pg. 22.*

1960s

Gordon Gribble, Ph.D. '67 with Lloyd Dolby, is a professor at Dartmouth College in New Hampshire. He recently spent a sabbatical year at the University of California at Santa Cruz where he finished co-authoring a book, "Palladium in Heterocyclic Chemistry." In his spare time he is a winemaker and scuba diver. Gribble won the UO Alumni Achievement Award in Chemistry in 1998.

Victor Snieckus, Ph.D. '65 with Virgil Boekelheide, returned to Canada (where he had received his B.S. in 1959) for a postdoctoral year with O.E. Edwards at NSERC. The following year he joined the faculty at the University of Waterloo. Snieckus held the Monsanto/NRC Industrial Research Chair in Chemical Synthesis and Biomolecule Design until 1998 when he accepted the Bader Chair in Organic Chemistry at Queen's University. Recently he was made a member of the Lithuanian Academy of Sciences. At the ceremony, Snieckus was asked to give a scientific lecture in Lithuanian. "Not an easy task," he writes. "Although I speak the language fluently, of course I have not studied chemistry using it."

Snieckus writes about life since 1992: "In 1992, NSERC, the Canadian granting body and Monsanto joined to award me

an Academic Chair which drastically changed my life: the overall result, which lasted till 1998, was a large research group, freedom to pursue fundamental new ideas, wonderful administrative assistance, minimal teaching duties, and no time for myself or my family (Anne, my wife: "Out of the quarter century of marriage to Victor, I have seen him a total of 365 days)." Bright and enthusiastic students made exciting things happen in the lab, pharmaceutical industry kept providing practical challenges in consulting, and time flew. In mid-97, 32 years at the University of Waterloo ended. Alfred Bader, the famous entrepreneur of Aldrich Chemicals and a 1944 graduate of Queen's University, Kingston, Ontario, had generously endowed Queen's with a Chair. I accepted the Bader Chair in Organic Chemistry and a group of 20 students moved to Queen's in less than one month, arriving July 1, 1998. The department has a wonderful chairman, Stan Brown, is full of bright young faculty and students, and Lake Ontario is two blocks from the university. To their immeasurable credit, the group hit the conveyor belt running and exciting results in the lab rapidly followed which allow little time to think how and why did it all occur."

John Natt, B.S. '64, visited the UO campus last September. After graduating from the UO, he received an M.S. in physical chemistry from the University of Washington in 1966. After a year as a crystallographic engineer with Texas Instruments, he went on to UC Berkeley, where he received an MBA in applied economics in 1969. Natt began his forest products industry career at Weyerhaeuser in Tacoma, Washington in '69. In 1974 he joined Crown Zellerback in San Francisco. He eventually became Director of Planning and Administration for Timber and Wood Products. In 1985 he started Clear Vision Associates in San Rafael, California, where he is Managing Director. Clear Vision does forecasting and analysis of the forest products industry, serving clients in the U.S., Canada, New Zealand, and Sweden. In this issue of UO Chemistry News, Natt has written about his experiences at the UO in the '60s. *See Reflections, pg.9; and story pg. 11.*

Richard Feinman, Ph.D. '69 with Sid Bernhard, returned as a visiting professor to teach a term of organic chemistry during the summer 2000. *See memoriam regarding his father, pg. 17.*

1970s

Vinh Tan Tran, B.S. '76, was an undergraduate chemistry major from Vietnam when Siagon fell in 1975. Tran lost his government scholarship as a result of the war and Professor LeRoy Klemm and his wife took him in for the summer until he could regain financial help. Because he was only 19 years old when he graduated from the UO, Tran was unable to gain admission to a medical school at that time but was admitted to a Ph.D. program at Johns Hopkins University. He went on to Harvard Medical School, received his MD degree in '84, and took residency training in ophthalmology. He married Joyce in '85 and eventually moved to Los Angeles to be closer to her parents. Tran took a position at the University of Southern California for five and a half years. In 1993, he started private practice as a retinal sub-specialist with three offices. Joyce is an internist who works part time. The couple has six children - a girl and five boys.

Joseph M. Owens, Ph.D. '76 with Thomas Koenig, is Research Manager at Floor Care Polymers, a Rohm and Haas Co. in Spring House, Pennsylvania.

Neil Johnson, B.A. 1970, returned to the UO on July 14, 2000 to present a seminar titled "Equilibrium Binding of ssDNA with ICP8, a ssDNA Binding Protein from Herpes Simplex Virus Type I". Neil is a familiar figure around the Chemistry Department and the Institute of Molecular Biology. He did undergraduate research with Hayes Griffith, a mini-sabbatical with Warner Peticolas in 1989, and a sabbatical with Pete von Hippel in 1990-1991. Johnson is currently a Research Scientist in a French National Laboratory, the Institut de Pharmacologie et de Biologie Structurale, CNRS, Toulouse, France (E-mail neil@ipbs.fr).

Dick Field, Postdoc '68-'74 with Richard Noyes, is co-recipient of the 2000 Alumni Achievement Award in Chemistry. *See story pg. 7.*

1980s

Daniel Muchiri, Ph.D. '83 with LeRoy Klemm, is a professor of chemistry at Egerton University in Njoro, Kenya. He is currently serving as Dean of the Faculty of Science, in charge of seven departments: chemistry, biochemistry, botany, zoology, mathematics, physics, and computing. He is also teaching and supervising three graduate students, though there is little money for research. He and his wife Elizabeth have four children: David (15), Phyllis (13), Ruth (11), and Ann(8). They have just completed building a house.

David Schiraldi, Ph.D. '82 with Richard Finke, is responsible for long-range polymer chemistry research at KoSa, the polyester portion of the former Hoechst AG. He divides his time between offices in Charlotte, North Carolina and corporate labs in Spartanburg, South Carolina and has collaborative efforts at several universities. Schiraldi is also an associate editor for the Journal of Applied Polymer Science.

Mike Fitzgerald, B.S. '82, is working as a financial consultant with A.G. Edwards & Sons in Salem, Oregon. He specializes in large portfolio management and estate planning.

Eliot Hall, B.S. '86, is working as a pediatrician in Bellow Falls, Vermont.

Robert Foster, a UO teaching assistant for general chemistry in the early '80s, is now senior counsel in environmental defense for the Environmental & Natural Resources Division of the Department of Justice. A recent write-up in C&E News quoted Foster as saying, "Most of the cases I deal with as an environmental litigator are cases with a scientific component." Foster holds a Ph.D. in chemistry from the University of Illinois and a J.D. from the UO. (*C&E News, August 30, 1999, pg44*).

Laura Hladky, B.S. '86, is working as a chemist at Nantek, Inc. in Manhattan, Kansas, and misses Oregon a lot. Nantek is a research and development company specializing in reactive nanoparticles.

Michael Scherz, Ph.D. '89 with John Keana, recently took over as Vice President of Chemistry at Actelion, Ltd in Basel, Switzerland. The pharmaceutical company focuses on drug discovery

and development. Scherz is responsible for planning, and eventually, building, Actelion's US-based pre-clinical research operations. After leaving the UO, Scherz accepted a position with F. Hoffmann-Roche, also in Basel. He worked in the central nervous system research group on excitatory amino acid pharmacology and medicinal chemistry. In '92, he joined Procter & Gamble Pharmaceuticals in Cincinnati, Ohio. During his first few years at the company, Scherz worked on gastric-safe non-steroidal anti-inflammatory agents. He joined the cardiovascular department in '94, where he took on project leader responsibilities for anti-arrhythmic research programs directed at voltage-gated potassium channels. In '99 Scherz was promoted to Section Head for Cardiovascular Research, responsible for research projects in heart failure and cardiac arrhythmias.

Julie Haack, B.S. '86, is now the Assistant Department Head for the UO chemistry department. *See story pg. 8.*

1990s

Peggy (Margaret) Rice, Ph.D. '90 with Rick Dahlquist, is teaching biochemistry at Cal Poly in San Luis Obispo, California. She recently learned how to perform a number of demonstrations while teaching general chemistry (and was thankful that no one got hurt). Rice is continuing research on responses to gravity in tomatoes and the amino acid content of wines. Greece, Turkey and Egypt were travel destinations last year. Last summer, Rice completed a couple of triathlons.

Heather Smith Blanchett, Ph.D. '99 with Bruce Branchaud, is completing a one-year postdoc at Organix Incorporated in Woburn, Massachusetts. Blanchette is investigating compounds active at the dopamine transporter - particularly, tropane, oxytropane, and indatraline derivatives. She says she is enjoying the research and the company. In her spare time, she's looking for a full-time job in the Boston area and settling in to her new house in Chelmsford with her husband.

Dale Braden, Ph.D. '99 with David Tyler, is working in technical support at Schrodinger Inc. in Portland, Oregon. The company makes molecular modeling software programs. In his spare time, Braden has resumed his home-

News, continued

brewing hobby (but he's keeping his home address secret).

Ben (Straw) Langsdorf, MS '98 with Jim Hutchison, is working at Willamette Valley Company in Eugene as an R&D chemist. The company formulates custom polymers for industrial applications including paints, coatings, and putties. The company also manufactures application equipment for its products. Langsdorf spends much of his time traveling, consulting with customers, and working in the lab.

Bob Schneidmiller, Ph.D. '99 with Dave Johnson, is working as a post doc at Clemson University in South Carolina. His current research involves a joint project with Professor Terry Tritt in physics and Professor Joe Kolis in chemistry. His work focuses on the synthesis of quasicrystals and their properties, particularly thermo-electric properties.

Bob Clegg, Ph.D. '99 with Jim Hutchison, is working as a post doc for Caltech professors Fred Anson and Ahmed Zewail. Anson is an electrochemist who has worked on the development of thin-layer electrochemical cells, the understanding of absorption processes on electrodes, and the behavior of electrode-confined porphyrin catalysts, among other things. Zewail is a spectroscopist, well-known for developing femtosecond pump-probe spectroscopy, for which he won a Nobel prize in chemistry this year. Clegg is working on a collaboration between the two. He is looking at some porphyrins that Anson's group made which are good four-electron reducers of oxygen - the waste product you get is water instead of hydrogen peroxide. The energy yield of the oxygen is double. Clegg and partner Joe Zou are working with Zewail's spectroscopy to try and understand how the process works.

In his spare time, Clegg is enjoying the weather and life in Pasadena and enjoys looking at the palm trees.

Maureen Wang, MS, '92 with Dave Johnson, has moved to Pleasant Hill,

California where she is continuing work as a web developer in a new position with eTranslate.com, a web globalization company. Previously, Wang worked for Carol/Trevelyan Strategy Group designing socially-conscious web pages. CTSG is a public policy firm based in Eugene with offices in Wash. DC, and Oakland, CA.

Billy Mark Britt, Ph.D. '90 with Warner Petcolas, is currently an assistant professor at Baylor University where he is engaged in research on the nature of enzyme catalysis. He also teaches biochemistry and physical chemistry. Britt's work is supported by the Welch Foundation and Oxigene. "I suppose I should also mention that I returned this past summer to Oregon for some steelhead fishing on the South Umpqua. I got skunked, of course."



2000 graduates Travis Abshere and Ben Paxton in the Richmond lab in 1999. Photo by Jack Liu.

Chia-Liang Charlie Cheng, Ph.D '93 physics with Tom Dyke, is living in his native Taiwan and survived the earthquake and the 2000 after shocks last fall. He is working as an assistant professor in the physics department at the National Dong Hwa University. Cheng and wife Yuh-Yao Lyda Wan (Ph.D'93 Art Education) are working on a training program for high school teachers in addition to their duties as teachers and researchers.

Mike Ansell, Ph.D. '98 with Cathy Page, has recently accepted a one-year lecturer position at Sonoma State University in Rohnert Park, California. He will also be helping develop a new inorganic/organic course for seniors that covers

synthesis and characterization. The university is located near Santa Rosa, about 50 miles north of San Francisco.

Amir Tamiz, Ph.D. '98 with John Keana, has finished up his postdoc with Alan Kozikowski at Georgetown and has recently accepted a position as a research scientist with Corvas International, a biopharmaceutical company. Tamiz will be working on the development of a new generation of drugs to treat cancer and other major diseases. During his stint at Georgetown, Tamiz was published seven times, and took out a US patent. A paper was recently published in the Journal of the American Chemical Society.

Leif Brown, Ph.D. '99 with Jim Hutchison, is working as an organic lab instructor at the UO.

Rachel Smith, B.S. '99, did research with Jim Hutchison before graduating with honors and moving on to Penn State for graduate school. She uses scanning tunneling microscopy (STM) to look at the domain behavior, self-assembly behavior, and electronic properties of the amide-containing, hydrogen-bonding self-assembled monolayers synthesized in the Hutchison lab at the UO. Smith also uses photoluminescence STM to study electronic and optical properties of gold nanoparticles (light emission can occur via inelastic tunneling from tip to sample).

Michael Montague-Smith, Ph.D. '94 with Bruce Branchaud, left Eugene in '94 with wife Kim and worked as an NIH postdoc with Michael Pirrung at Duke for two and a half years. Son Nathaniel was born in '95 and just recently started kindergarten. In '96 Kim was hired by the department as an assistant to the Chair. Soon afterward, Michael was offered a position as a Visiting Professor - teaching organic chemistry to sophomores. This year, Michael accepted a permanent faculty position as Associate Director of Undergraduate Studies. He is responsible for teaching and developing a new general chemistry curriculum and coordinating the undergraduate independent study program.

For fun, Michael does woodworking and plays "low-level" basketball. When time allows, the family goes to the Carolina

shore - or hangs out in the back yard to watch the array of wild life that lives there (rabbits, turtles, frogs, a huge variety of birds, spiders - and the occasional snake).

Writes Michael, "There is a fire hydrant just outside the chemistry building that is painted with the Duck colors (which are not common on the Duke campus). Whenever I pass it, pleasant memories of grad school and living in Eugene pop into my head."

2000s

Travis Abshere, Ph.D. 2000 with Geri Richmond, has accepted a position as a process engineer 3 at Triquint Semiconductor in Hillsboro, Oregon. Triquint designs, develops, manufactures and markets gallium arsenide wafers and chips for the wireless communications, telecommunications, aerospace, and computing markets. Abshere will be in charge of equipment in the metals division, developing new processes for improving yield, designing experiments to address long-term problems, and integrating new equipment into the business.

Unfortunately for his lab mates, Abshere took his large coffee cup collection and his toy drawer to his new digs.

Tom Lau, M.S. 2000 with Mike Haley, is working for Ligand Pharmaceuticals in La Jolla, California. The company discovers, develops and markets new drugs to treat cancer, skin diseases, osteoporosis, and other diseases. Lau will be working as an Assistant Scientist, helping to develop drugs to regulate hormone receptors. Lau says, "Working in Mike's lab definitely prepared me for work as a medicinal chemist in that my research in small molecule synthesis helped me develop the techniques that I'll be using out in industry." Lau plans to spend his free time at the beach catching waves on his surfboard.

Seth Rasmussen, a postdoc in the Hutchison lab, '95-97, and former organic instructor at the UO, has joined the faculty at North Dakota State University in Fargo - best known from the 1996 Coen brothers' film of the same name. The department has 15 faculty members and an impressive collection of instrumentation.

Rasmussen's research at NDSU combines organic, inorganic, and polymer chemistry. His work focuses on the design and synthesis of new pi-conjugated ligands and their incorporation into well-defined multi-metallic coordination complexes and polymers. Current work is focused on a little-studied polymer, polythieno[3,4-b]pyrazine. One of his primary goals is to use this polymer for the production of metallated polymeric materials, which will combine the electro- and photo-chemical properties of classical transition metal coordination complexes with the electronic and optical properties of conjugated organic polymers.

Rasmussen hopes the combined attributes of this hybrid system will eventually provide materials of interest for the design of donor-acceptor conjugated systems utilizing inorganic sites as both donors and acceptors, as well as serving as electro- or photo-sensitive switches. Rasmussen's research has attracted two graduate students and six undergraduates so far.

Christoph Balzarek, Ph.D. 2000 with Dave Tyler, is now working as a postdoc in John Bercaw's lab at Caltech. Currently he is working with the homogeneously catalyzed autoxidation of hydrocarbons. His lab just returned from a backpacking trip in the Sierra Nevadas

Heather Allen, Postdoc with Geri Richmond '97-2000, is an Assistant Professor in environmental chemistry at Ohio State. She was recently featured in a story in C&E News (June 19, 2000) highlighting new professors.

Faculty News & Awards

Assistant Professor **Beatrice Darimont** has joined the faculty in the chemistry department and the Institute of Molecular Biology. Darimont received her B.S. in mathematics and M.S. in Biology from Albert-Ludwigs University in Freiburg, Germany in 1990. She completed her Ph.D. at Biozentrum University in Basel, Germany, under Kasper Kirschner and her postdoc with Keith Yamamoto and Robert Fletterick at the University of

California in San Francisco.

Darimont's research is at the interface between Medicine, Biology and Chemistry and seeks to understand the regulatory mechanisms that constitute particular signal transduction pathways. Her research focuses on nuclear receptors, which are transcription factors that mediate the action of important hormones such as estrogen, progesterone, testosterone, glucocorticoids, thyroid hormone or Vitamin D. Besides analyzing the molecular processes involved in the activation of nuclear receptors by these hormones, Darimont plans to study the role of nuclear receptors in vertebrate development using zebrafish as a model system.

Deborah Exton was promoted to Senior Instructor with tenure. Exton is a physical chemist who teaches in the General Chemistry sequence as well as special topics courses related to Environmental Chemistry. She has been instrumental in the development of innovative new techniques that incorporate technology and active learning into the laboratory and lecture sequences. Exton created SUPeR Chemistry, a peer-led supplemental instructional program to help retain General Chemistry students and she is actively involved in university-wide student retention programs and learning communities.

James Hutchison was promoted to Associate Professor with tenure. Hutchison's research focuses on how organized molecular systems facilitate and modulate electron transfer is necessary to explain a number of important processes ranging from photosynthesis to nanoelectronics. Hutchison has been instrumental in developing the world's first instructional organic green chemistry laboratory with **Ken Doxsee** and several graduate students (*see pg. 1*). He also helped develop CHIP Camp, a week-long summer program for undergraduates, and the Industrial Internship Program offered through the Materials Science Institute and featured in the last issue of *Chemistry News*.

Professor **Mike Kellman's** work on the molecular vibrational spectra of highly excited states was highlighted as part of the American Conference on Theoretical Chemistry. The meeting was held at the University of Colorado at Boulder last summer. Kellman and graduate student

Vivian Tyng are working with Marc Joyeux and Dominique Sugny at the University of Grenoble, Robert Field at MIT, and Haruki Ishikawa at the University of Tokyo. New laser techniques allow their colleagues to produce spectra of molecules as they undergo isomerization reactions. Tyng and Kellman subject the data to bifurcation analysis, a mathematical technique. In effect, this allows them to "watch" what the molecule is doing as it is "caught in the act" of isomerization. This is an example of using the window of detailed spectroscopy to get information about ultrafast processes in molecules, an area which Kellman has helped pioneer. *C&E News*, August 2, page 26.

James Long, senior instructor, won his fourth Mortor Board Professor of the Month Award last November. The award, presented by the senior honor society, recognizes scholarship, leadership and service. Voting is open to all students two days each month an award is given. The election is write-in only and all faculty are eligible to win. Chemistry faculty won three out of seven awards last year. Long also had the honor of being selected by students to give this year's commencement address.

Professor **Pete von Hippel** is the 1999 recipient of the American Society for Biochemistry and Molecular Biology Merck Award. This award recognizes outstanding contributions to research in biochemistry and molecular biology. von Hippel received the award at the annual ASBMB meeting in June.

Professor **Frederick Dahlquist** has been selected as a College of Arts and Sciences Distinguished Professor for the remainder of his tenure in the college. Dahlquist will receive \$5,000 for research during the first three years of his appointment.

Michael Haley, associate professor, was awarded the Alexander von Humbolt Research Fellowship for 2000-2001. Humbolt fellowships are awarded to scholars world-wide, enabling them to spend several months at a German research institution. Haley will split his seven-month sabbatical between this fall and next with Professor Henning Hopf at the Technical University of Braunschweig.

Professor **Geri Richmond** has received an NSF Research Creativity Extension for 2000-2001 for her lab's research on "Molecular Structure and Adsorption Dynamics at Liquid/Liquid Interfaces." Creativity Extensions are awarded by the Chemistry Division of NSF to a small number of principle investigators each year who have shown exceptional progress in their currently funded research. The Creativity Extension grants funding for two additional years of a currently funded NSF grant, freeing the principal investigator from needing to submit a formal research proposal for those two additional years. Richmond was awarded \$430,000 for two years.

Assistant Professor **Andy Marcus'** studies on mitochondria under different metabolic conditions were highlighted on the cover of the October issue of



Skylight, Willamette Hall
Photo by Jack Liu

Biophysical Journal. The experiments are unique in that Marcus and his collaborators were able to understand the detailed motion of this sub-cellular structure using a new method his lab invented and calls Fourier Imaging Correlation Spectroscopy. Marcus collaborated with biology Professor Rod Capaldi and biology graduate student Daciana Margineantu. The image is part of Marcus' submission, "Dynamics of the Mitochondrial Reticulum in Live Cells using Fourier Imaging Correlation Spectroscopy (FICS) and Digital Video Microscopy."

Marcus was also awarded two annual grants of \$40,000 each from the American Heart Association for his project, "In Vivo Studies of Protein Motion and Distribution in Reticulate Mitochondria by Fluorescence Imaging and Spectroscopy."

Professor **Cathy Page** co-organized the Materials Chemistry Workshop on October 12-15, 2000 at Timberline Lodge on Mount Hood outside Portland. The workshop was the eighth in a series of created to provide a forum for discussion of new research in materials chemistry, with an emphasis on unpublished results.

Dr. Richard Linton, the new vice provost for research and dean of the graduate school was appointed full professor in chemistry at the University of Oregon. Linton came to the UO from University of North Carolina at Chapel Hill, where he has been chief research officer and director of sponsored programs. He has been at UNC for 23 years, serving as a faculty member and administrator. Linton will replace the Interim Vice Provost for Research, Chemistry Professor Tom Dyke. Linton will also serve as dean of the graduate school.

As vice provost for research, Linton will administer the UO research budget which is approximately \$54 million per year. He will oversee 22 interdisciplinary centers and institutes, the Office of Research Services and Administration, the Office of Human Subjects Compliance, the Office of Veterinary Services and Animal Care, and the Office of Technology Transfer.

Dr. Joseph M. Beechem has been appointed adjunct professor by the department. Beechem, formerly at Vanderbilt, recently moved to Eugene to accept a position as bio sciences director for Molecular Probes. His research interests include florescence spectroscopy, kinetics, protein folding, and protein/DNA interactions.

Ron Swisher, who received his Ph.D. from the University of Oregon in 1976, is currently serving as a Visiting Professor. Swisher is on leave from the Oregon Institute of Technology in Klamath Falls, Oregon. He is teaching the environmental sequence of General Chemistry and will be teaching Physiological Biochemistry next spring.

STUDENT NEWS

Scott Reed, a fifth-year graduate student in Jim Hutchison's lab, won the **Hancock Award in Green Chemistry**. Reed won the award for his role in

developing the world's first organic green chemistry instructional laboratory for undergraduates at the UO. Offered by the American Chemical Society to just one student per year, the award carries tremendous prestige for those working in the growing area of green chemistry - in part, because it was presented in conjunction with the Presidential Green Chemistry Award in Washington D.C. in June. ACS President Daryle Busch presented Reed with the award. Reed also received a \$16,000 UO Doctoral Research Fellowship for 2000-2001. The fellowship is intended to help facilitate completion of his dissertation.

Andrew Jost, a senior in biochemistry and music, won a **Goldwater Scholarship** for the 2000-2001 academic year. The award includes \$7,500 for tuition and expenses. Last year three other UO chemistry students won the prestigious award: **Ben Paxton**, **Nisha Makadia**, and **Todd Blevins**.

Hannah Grubb and **Jacob Meyer** were awarded SPUR grants to work in John Keana's lab this past summer. The Summer Program for Undergraduate Research provides a \$1200 per month stipend for two months of research. Grubb also received a \$5,000 Bill Bowerman Fund Scholarship, and the Andrea Gellatly Junior Woman of the Year Scholarship from the Robert D. Clark Honors College.

CORRECTIONS/UPDATES

•According to LeRoy Klemm's article in last year's News, Adolph Kunz didn't teach classes. But Bruno Morosin remembers it differently. He writes, "I also arrived at the UO in the September of '52. Concerning Adolf Kunz: He taught classes until the end of the fall of 1955 or the beginning of the winter term 1956, when he suffered a stroke. During my junior year I took Qualitative and Quantitative Analysis, which Kunz taught every year."

•Wayne St. John may be the first student to graduate from the UO with a Ph.D. in organic chemistry. He graduated in 1954. Klemm remembered Herman Ziffer as the first organic graduate, in 1955.

In Memoriam

Bill Simpson, a former UO chemistry professor, died of heart failure March 20, 2000. He was 79. Born December 7, 1920 in Berkeley, California, Simpson received his B.S. from UC Berkeley in 1943 and his Ph.D. in 1948 from the same institution. He taught chemistry at the University of Washington before coming to the UO in 1963. Simpson was department head from '72 to '75. He was awarded a Fulbright Lectureship in 1970 and spent the year teaching in Peru.

An expert in physical chemistry, Simpson was the author of numerous publications, including 58 research articles and the book, *Theories of Electrons in Molecules*. He chaired a Gordon Conference on theoretical chemistry in 1967.

Simpson served as a captain in the U.S. Army Signal Corps during World War II and earned a bronze star. He was a lithographer and photographer. He also enjoyed trains, exotic European sports cars, and playing the piano - his repertoire extended from Bach to boogie woogie.

Simpson retired from the UO in 1977 and eventually moved to Taos, New Mexico, where he lived with his family before moving to San Luis Obispo. He is survived by his wife Carmen, also a quantum chemist, and four children.

Christine Klemm, wife of retired Professor LeRoy Klemm, died October 10, 1999 of cancer. She was 78. Born December 5, 1920, she married LeRoy Klemm in 1945 in Texas City, Texas. She lived in Indiana, Ohio and Massachusetts before moving to Eugene in 1952. She is survived by her husband LeRoy, a son and two daughters.

Christine Klemm studied music at Oberlin College in Ohio and taught piano for 41 years. Favorite pastimes included travel, bridge, music and women's organizations. She accompanied LeRoy on sabbatical leaves to Cincinnati, Switzerland, Denmark, Holland, and Australia. She was a member of the University of Oregon Women's Club, Phi Beta, and the P.E.O. Sisterhood.

A celebration of life was held in honor of Christine Klemm on October 24 in Gerlinger Lounge on the UO campus.

Max Feinman died December 2, 1999 at the age of 94. Father of UO chemistry alum and visiting professor Richard Feinman, the elder Feinman was a surgeon at Lefferts General Hospital in Brooklyn and a teacher at the New School for Social Research in New York. He received his medical degree from Long Island College of Medicine. He was a captain in the U.S. Army during World War II. He is survived by his wife and two sons.

Patricia C. Jost, Senior Research Associate from 1968-84 with Hayes Griffith, died of age related causes on October 12, 2000. She was 81. Pat Jost was born on July 8, 1919, received her B.S. from Memphis State U. (1952) and her Ph.D. with Edward Novitsky in Biology from the UO in 1966. After leaving the Griffith group she became Program Director, Biophysics, National Science Foundation (1984-1986), and then Executive Secretary, Molecular Cellular Biophysics Study Section, National Institutes of Health (1986-1990), before retiring in Eugene. She co-authored 44 scientific papers and two books, and received a commendation from the General Medical Institute, NIH in 1989. Jost is survived by three children and four grandchildren.

Undergraduate Research Projects

Below are some of the students who completed research projects last year. Unfortunately, space limitations limit the number we can include here. - ed.



BRYCE B. BARIL, PORTLAND, OR
PROFESSOR O. HAYES GRIFFITH, SUPERVISOR
ANTICIPATED GRADUATION: JUNE, 2001
RESEARCH PROJECT:

I am doing kinetic modeling of the behavior of the *B. cereus* PI-PLC enzyme using the program Mathematica. The enzyme is a single subunit, yet with C4 Fluorescein substrate it exhibits sigmoidal kinetics. With no other subunit of the enzyme present to cause allosteric behavior, we are searching for other models that will allow sigmoidal kinetics of the enzyme acting cooperatively with itself.

FUTURE PLANS:

Work in the biotechnology industry.



A.J. BOYDSTON, EUGENE, OR
PROFESSOR MIKE HALEY, SUPERVISOR
ANTICIPATED GRADUATION: 2001
RESEARCH PROJECT:

Synthesis and characterization of a novel dehydrobenzo[18]annulene (DBA). This hypercool compound has unique symme-

try not present in any previous DBAs. Ester-functionality provides access to an array of other derivatives via simple, high yield functional transformations. The primary motivation behind the synthesis is the expected liquid crystal behavior that this molecule and its derivatives could display.

I learned about this laboratory when Prof. Haley presented an overview of his research during an Organic Chem. lecture. Background reading on the topics fueled my interest in synthetic organic chemistry. This particular project provides experience in widely applicable synthetic technique and strategy as well as an interesting behavioral study.

FUTURE PLANS:

I hope to continue school in the pursuit of a Ph.D. in chemistry. My research experience during the synthesis of this compound has greatly affected my decision to continue in this area of chemistry.



MANDY DUTTON, HOOD RIVER, OR
PROFESSOR DAVE JOHNSON, SUPERVISOR
ANTICIPATED GRADUATION: JUNE, 2001
RESEARCH PROJECT:

I'm working with Bismuth and Selenium to try to see what compounds we are able to make with these two elements using modulated elemental reactant (MER) synthesis. There are many compounds on the phase diagram and I am determining whether or not our method is useful in synthesizing them. MER synthesis has been helpful in the past in making more pure samples and providing better control over what product forms by altering the stoichiometry of elements we deposit. I began working on this project after switching from another project that I was working on in the Johnson lab.

FUTURE PLANS:

I will possibly do an industrial internship before returning to attend graduate school.



HANNAH GRUBB, SALEM, OR
PROFESSOR JOHN KEANA, SUPERVISOR
ANTICIPATED GRADUATION: JUNE, 2001
RESEARCH PROJECT:

I helped synthesize competitive glutamate and glycine site antagonists for the NMDA receptor. The goal is to attach the two antagonists through a rigid chain of known length in order to learn the distance between the two sites and learn more about of the topography of the receptor.

I became interested in this project after hearing an Organic Chemistry lecture by Dr. Keana on how antagonists at the glutamate and glycine sites in the NMDA receptor can lessen the damage to brain cells during strokes or other traumatic events that occur within the brain.

FUTURE PLANS:

I plan to do research for my Honors College thesis this summer. After I graduate I would like to do Americorps for a year, and then enter medical school.



MARYAM RAHIMI, TRINIDAD AND TOBAGO
PROFESSOR DAVE TYLER, SUPERVISOR
ANTICIPATED GRADUATION: JUNE, 2001
RESEARCH PROJECT:

The purpose of the experiment is to look at

the oxidation of an alcohol to a ketone using an organometallic compound. A molybdenum complex acts as the catalyst and makes this reaction possible. This method provides an alternate way for alcohol oxidation as opposed to using stoichiometric reagents. This research is interesting for economical and environmental issues.

FUTURE PLANS:

My future plan is to go to Medical School. Although my research is not very closely related to this goal, I know that in the event that I decide against Medical School, I have a strong interest for research in chemistry which I gained only from the experience in working with the Tyler group.



JOSEPH ROSS, ALBANY, OR

PROFESSOR DIANE HAWLEY, SUPERVISOR

ANTICIPATED GRADUATION: JUNE, 2000

RESEARCH PROJECT:

*I am researching the interactions between the TATA-Binding Protein (TBP) and DNA during the process of transcription initiation in eukaryotes. Using in vivo reporter gene assays with mutant and wild-type TBP, and consensus or non-consensus TATA sequences in *S. cerevisiae*, we are hoping to understand the role of the unconserved N-terminal tail of TBP in DNA sequence recognition and ultimately transcription initiation.*

I am highly interested in genetics and research; the direction which the Hawley lab is taking is an ideal fit to my interests.

FUTURE PLANS:

I am currently pursuing temporary employment in medical research while I determine which graduate school program will suit my needs.



WALTER WEARE, SANTA RITA, GUAM

PROFESSOR JIM HUTCHISON, SUPERVISOR

ANTICIPATED GRADUATION: JUNE, 2000

RESEARCH PROJECT:

I have developed a new synthetic approach for triphenylphosphine stabilized gold nanoparticles that are 1.4 nm in diameter. This approach has allowed us to greatly scale up our research on these particles, as it is much simpler and safer than previous ways to make this material. Also, the new synthetic approach has allowed the examination of previously unexplored aspects of size and reactivity of this class of gold nanoparticles.

I have always been interested in small objects, and I was excited by the opportunity to work with gold nanoparticles.

FUTURE PLANS:

Attend graduate school at MIT.

Reflections from the '40s

George Alkire remembers he and fellow student Gilbert Hunt were the first graduate students enrolled in chemistry (1942) when the science departments were returned to Eugene after being held in Corvallis during the depression. Dr. Adolph Kunz was head of the Chemistry Department and Dr. Van Rysselberghe was his advisor and mentor on polarography research. Alkire received an M.S. degree from the UO in 1944. His wife Esther received a M.A. in mathematics the same year.

"I had the opportunity, as a graduate teaching assistant, to come in contact with the fine young men in the Pre-Engineering and Pre-Meteorology programs of the Army, and in the Army Air Force, at that time. These "students" marched to early morning classes singing patriotic songs, which was truly an inspiration to the rest of us in the dark days of the war. Another reflection is that of abandoning my slide rule for a computer to make calculations. The state of the art computer was a mechanical "Marchant," not as fast as the slide rule, but more accurate."

EQUIPMENT DONATIONS GO A LONG WAY

LSI Logic and Intel have made large equipment donations in the past year to the Materials Science Institute.

The Materials Science Institute fosters research between chemistry and physics at the University of Oregon. Intel recently donated \$425,000 worth of instrumentation now being used in chemistry, physics and biology labs. The gift included two optical light microscopy stations with CCD cameras and vibration isolation tables. A large sputter deposition system was also donated and parted out to various MSI laboratories, including six cryopumps, five turbo pumps, roughing pumps, and associated vacuum hardware and

power supplies. The system measured over ten feet square and weighed several tons.

LSI Logic, an international supplier of custom, high-performance semiconductor chips, donated several pieces of instrumentation last spring, including five Zeiss Axiotron microscopes. These high-performance microscopes have been incorporated into existing chemistry and physics labs, and joint research facilities. LSI is part of the large expansion of semiconductor manufacturing into the state, with a state-of-the-art manufacturing operation in Gresham.

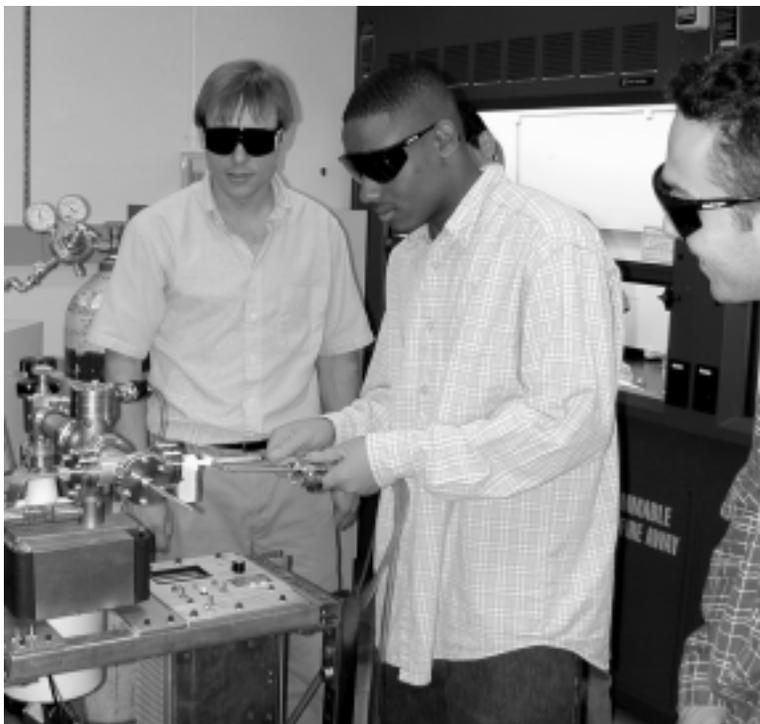
Chip Camp!

New summer program has successful first year

This year the Materials Science Institute launched Chip Camp, a week-long expense-paid introduction to the microelectronics industry for undergraduates in chemistry and physics. Fourteen students of chemistry and physics stayed on campus and participated in the introductory program and unanimously declared it a success.

Funded in part by the National Science Foundation (Division of Materials Research), this program provides an opportunity for students to learn about the contributions chemistry and physics make to the semiconductor industry and the career options available to scientists.

Hands-on laboratory work is at the heart of the curriculum. Students have the opportunity to fabricate their own light-emitting diodes while exploring the chemistry of semiconductor materials, the physics behind semiconductor devices, and the chemistry of photolithography. Class time and career discussions supplement the labs, and tours of



Professor Jim Hutchison looks on as Jerran Hill and Aleksandr Reyf work in the lab during Chip Camp. Photo by Carrie Daniels-Hafer.

local chip-manufacturing companies illustrate the large-scale implementation of the chemical processes discussed.

The concept of Chip Camp was developed by professors Mark Lonergan and Jim Hutchison to complement the MSI microchip graduate program. These programs are part of the UO's efforts to train students in areas where there is a recognized need for them to work as

members of multidisciplinary teams. The development of the integrated circuit is a prime example of the remarkable progress that can result when the contributions of chemists, physicists, and engineers combine toward a common goal.

Chip Camp provides undergraduate chemistry and physics majors with the necessary background to understand the language and technology of the microelectronics industry and the important role chemists and physicists play in its future. The program has the added advantage

of exposing students to the department and the facilities offered at the University of Oregon.

This was the first year Chip Camp was held. Lonergan and Hutchison worked with graduate student Carrie Daniels-Hafer to teach and develop curriculum materials.

Look for more on this exciting program in the next issue of Chemistry News.



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Commencement 2000

Comments to graduates by alumnus Marion Hill

When I asked Dr. Griffith for suggestions on what one would say on this occasion, he replied, "In essence just say, been there, done that". I have 'been there' where you are - but at a time a brief half century ago when the Chemistry Department was undergoing a resurgence from being largely a service department to one offering advanced degrees. I was fortunate to be one of about 5 chemistry majors taught by four great professors, Donald Swinehart, Frank Reithel, and Hans Heymann (who had just recently joined the department) and Pierre van Rysseberghe. These men constituted the majority of the teaching staff.

Our labs were in ancient McClure Hall, built before 1900, and covered with the traditional ivy. Its hood system was antiquated and inefficient to the extent that chemical aromas were evident whenever one was in the building. The ivy however didn't prevent our odors from stinking out the next door journalism school on occasion, but we lucked out in not having any explosions. Graduate student research was done largely in surplus World War 2 quonset huts brought in to provide space for the burgeoning enrollment which doubled in January 1946. As in the military, long lines at registration were normal. Barracks from camps were brought in for dormitories; dining halls were like mess halls. Housing for married veterans was scarce. Most of us were supported by the GI Bill, which some say is the only government program that ever made a profit, when one considers the return of taxes generated by the overwhelming increase in income from the post-war generation.

From this revitalization the department has grown in size, and maintained very a high quality of teach-

ing and research which gained the department international recognition. Now there are twenty seven members of the teaching faculty, and thousands of square feet of laboratories and lecture halls. The post war cadre of professors laid a foundation that led to the "done that" for us —the us being myself and a lovely supporting wife, Susan.

You graduates' own foundation laid here with your parents' support and that of others' is more than a transition of meeting a goal and of going on to tackle the world. To paraphrase a Bill Cosby saying, "The world may be your oyster, but you ain't necessarily going to get the pearl".

Others' support in your education is in the form of investment by the department budget, scholarships, donations, government and private grants that today provide the largest share of total costs. Costs were modest when I was here, even taking into account the greater purchasing power of the dollar. Total tuition, fees, and charges were \$42.50 per term; total cost for a year for everything, \$750. Out of state students were charged an additional \$150. Graduate student fees and tuition were \$39. This schedule made it possible for many to attend the university. The import of these seemingly low costs, post-war, was that the state was funding the university about 90% of its budget. Today state support is only about 16%, and may become less. Thus the University of Oregon faces the financial challenges of a private university. It is dependent upon many diverse sources, which include the financial support of its graduates. We need to be like Harvard, Stanford and others in alumni support. Thus as you remember the foundation of your career, your support of the Chemistry Department is most welcome; even a

small annual contribution of \$15 or \$20 makes a difference. I recall a citation I found while shopping at Office Depot the other day — "We make a living by what we get — but we make a life by what we give". Thank you for listening.

During World War II, Marion Hill was in Combat Intelligence of the 365th Fighter/Bomber Group Headquarters. He participated in the Normandy invasion in June 1944. On D-Day he was operating from an air field in Beaulieu, England, near Southampton. He moved into Normandy on June 16, 1944. On New Years Day, January 1, 1945, in Metz now part of France, he was wounded in action during a surprise attack by a squadron of Messerschmidts. After recovery, Marion attended the U. of O. on the G. I. Bill. Marion received his B.A. in 1948 and M.A. degree in 1949 in chemistry here. He then began his professional career at the National Bureau of Standards and then joined the U.S. Naval Ordnance Laboratory. There he developed the nitroplasticizer for the Polaris missile rocket motor. Marion Hill received a commendation from the Navy for extending the range of the Polaris by 1,000 miles, so that it could be launched from a nuclear submarine and reach any adversary. It can be argued that this hastened the end of the Cold War. In 1960 Marion Hill joined the Stanford Research Institute where he became director of the Institute's Chemical Laboratory employing more than one hundred chemists - contributing to solving a variety of environmental and industrial problems, including the chemical reactions in smog. In recognition of his outstanding career, The U. O. Chemistry Department awarded Marion Hill the 1996 Alumni Achievement Award in Chemistry. (From the Commencement introduction of Marion Hill by Hayes Griffith).

Graduating Class of 2000

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Chemistry

Michael Andrews
Todd Blevins
Jason Bouwman
Jason Brock
Angus Campbell
Peter Cavagnetto
Danielle Della-Selva
Melody Elrod
Tyler Grassman
Eric Hanson
Alicia Hill-Force
Shea Johnson
Tracy Lindberg
Sam Lonberg
Steven Maxwell
Benjamin Paxton
Steve Robson
Elizabeth Saltonstall
Andrea Sieg
Tricia Tighe
Tou Vang Thao
Sarah Tresham
Sophie Uchimiya
Marianne Wherity
Takeru Yoshida
Edward Yost

Biochemistry

Bryce Baril
Greg Byrd
Jessica Cervantes
Charity Hansen
Robert Hillstrom
Newamul Khan
Benjamin Kahlman
Christopher Larson
Summer Lind
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Master of Science

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Doctorate

Travis Abshere
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Heather Blanchette
Dale Braden
Robert Clegg
Sonja Gerrard
David Gillespie
Bruce Howard
Bethany Jenkins
Joshua Pak
Peter Rupert
Robert Schneidmiller

AWARDS

Chemistry Major with Honors

Todd Blevins
Danielle Della-Selva
Saskia Neher
Joseph Ross
Andrea Sieg

University Academic Honors

Summa Cum Laude

Nisha Makadia
Melissa Sanders

Magna Cum Laude

Todd Blevins
Summer Lind
Benjamin Paxton
Joseph Ross

Cum Laude

Bryce Baril
Gregory Byrd

Phi Beta Kappa

Jana Mooster
Saskia Neher
Andrea Sieg

Bill Bowerman Fund Scholarship - Named for Professor John Keana

Hannah Grubb

Biochemistry Achievement Award

Summer Lind

Inorganic Chemistry Achievement Award

Danielle Della-Selva
Tricia Tighe

Organic Chemistry Achievement Award

Sophie Uchimiya

Richard M. Noyes Physical Chemistry Achievement Award

Summer Lind
Benjamin Paxton

American Institute of Chemists Foundation Award

Saskia Neher
Walter Weare



Marion Hill, Class of '48.

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