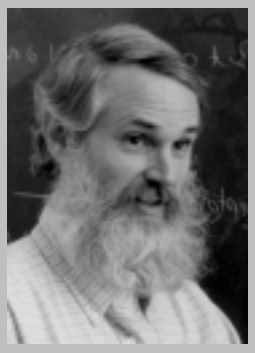
UO Chemistry News

University of Oregon • College of arts and Sciences • Department of Chemistry • 1999



The Patent Scientist

Getting inventions to market

Back in the 1950's, John Keana and his buddies invented a marble launcher by combining the explosive properties of calcium carbide and water with a metal pipe, watching the round orbs fly over the fields of rural southwestern Michigan. Keana never patented that invention and probably missed the opportunity to make millions. Fortunately, the UO Chemistry Professor has had numerous opportunities since then to invent and patent his work. With over 40 patents in hand and more than 10 pending, the highly regarded scientist holds more patents than any other academician in the state.

Keana's patents include neuroprotective drugs used to minimize brain damage due to stroke, head injury or heart attack; processes that may lead to the development of microbiosensors to monitor plasma levels of drugs and drug metabolites in the blood; and novel amplifier molecules useful in the diagnosis and treatment of disease.

"Without protection, no company would invest the hundreds of millions of dollars necessary to see a drug to market," says Keana.

Getting his inventions and ideas patented wasn't always easy. In the late 60's, he and fellow UO chemistry professor Hayes Griffith published a paper on a paramagnetic polymer paint that could potentially make planes invisible to radar. They tried to patent their idea. But Griffith admits, "we didn't try very hard." Unable to find anyone in the University who knew much about applying for patents, the busy young academics let the idea die.

Years later, Keana became involved in therapeutic drug discovery by combining forces with Professor Eckard Weber, a pharmacologist who, at that time, was at Oregon Health Sciences University in Portland. Together, they identified a novel molecule with potential as a new treatment for schizophrenia. They teamed up with a fledgling company in Cambridge, Massachusetts called Cambridge NeuroScience with an eye toward optimization of the drug. With the potential of a major drug discovery came the urgent need to patent any discoveries. "Without protection, no company would invest the hundreds of millions of dollars necessary to see a drug to market," says Keana.

While the university still didn't have many resources devoted to patents and marketing, Cambridge NeuroScience was willing to pay for the worldwide patents costing tens of thousands of dollars in exchange for an exclusive license for the discoveries. The project eventually led to Cerestat, a stroke drug currently in the final phase (III) of clinical trials. Subsequently, Keana and fellow researchers founded two companies to develop and promote their ideas: *Acea* (bought out by *CoCensys*), to develop and market neuroprotective drugs and *Advanced Microbotics* (now, *Ikonos*) to market

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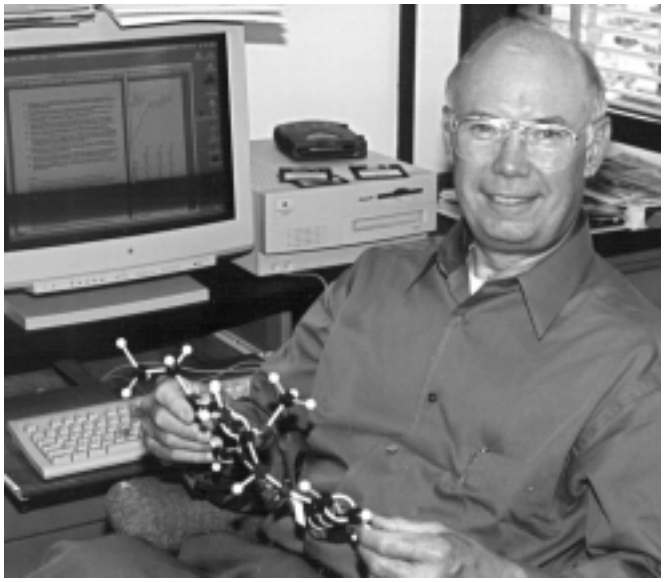
the technology that will hopefully lead to microbiosensors.

Today, universities and researchers recognize that patents can be a big source of revenue. Companies are willing to buy the right to use the technology Keana and others develop and the University and its inventors stand to gain royalties if those inventions help the company turn a profit.



The University of Oregon opened its Technology Transfer Office in 1992, a decision prompted by the promise of profits, and the passage of the Bayh-Dole Act of 1980, which allowed universities title to inventions funded with federal dollars. The office is responsible for finding a market for the inventions of UO faculty and students. Income from licensing agreements is divided between the inventor, the department, and the university. Todd Sherer was hired as the first full-time director in 1997. He has two office staff.

Licensing agreements have made significant contributions to research at some universities. Stanford University's Office of Technology Licensing was founded in 1970 and has successfully licensed 298 technologies, producing $61.2 million in royalty income in the fiscal year 1997-98 and employing 20 staffers. The UO Tech Transfer office is small by comparison, but the potential is there. In the last five years, income has grown from $50,000 to over $300,000.

"Industry has certain objectives for their company. If that need is close to the research that a faculty member is doing in the lab, it can be a wonderful partnership for both of them," says Keana. Though modest, income from the licensing of patents he holds has helped fund further research in Keana's lab and the UO's Department of Chemistry.

While Keana and other inventors file many patent applications for technology that never gets licensed or if licensed, never makes any money, one successful patent can mean millions of dollars for the university. Before their patents expired in 1998, Stanford enjoyed $30 million in revenue from patents on recombinant DNA technology alone. "Unless you have a crystal ball, you don't know which ones will work and which won't," says Sherer. In the meantime, Keana's busy thinking up more inventions.

- L. Ritzow

Klemm Remembers Early Days at UO

Photo by Jack Liu

The Chemistry Department celebrated Dr. LeRoy Klemm's 80thbirthday with refreshments on Friday, July 30, a day early. Klemm, recently named Outstanding Scientist of the Year by the Oregon Academy of Sciences, gave us a glimpse of what the Chemistry Department was like when he arrived at the UO in September, 1952. He was the only organic chemist in a faculty of six. The others were Adolph Kunz (department head), Pierre Van Rysselberghe, Donald Swinehart, Frank Reithel , and George Gorin.

The Chemistry Department had just moved out of McClure Hall and into new offices and laboratories in the new Science Building, now called Pacific Hall. Adolph Kunz told Klemm, "I don't see how we are ever going to fill this building." Since then, seven more science buildings have been constructed. Kunz did neither teaching nor research; Van Rysselberghe specialized in electrochemistry, especially polarography, and Swinehart, in gas kinetics, especially as measured on his home-built mass spectrometer. In tune with the cut-and grind biochemistry of the time, Reithel extracted lactase from fresh cows' udders and studied its catalytic properties. Gorin used UV-visible spectrometry to study molecular associations in solution, while Klemm worked on synthesis of potential anticancer drugs and correlation of geometry of organic molecules with reactivity on surfaces.

Two graduate students moved from Indiana University to work on these projects. One, Herman Ziffer, became the first person to receive a Ph.D. in organic chemistry from the UO, in 1955. University enrollment was 5,500 and Eugene had a population of 35,000. Predentistry was a popular program at that time with 100-200 regularly pursuing it at the UO. Klemm was the head advisor for predentistry for some 20 years.

From THE DEPARTMENT HEAD

September 1999

Photo by Jack Liu

Dear Chemistry Alumni & Friends,

It is a pleasure to write to you for the first time as chair of the Chemistry Department. I am happy to report that the department continues to be in good health.

The graduation ceremonies last June showcased one of the largest graduating classes in our history. Some of the increase was due to the inclusion of the Biochemistry majors. This formal program, that started two years ago has begun to produce its graduates. As usual, our majors are some of the most gifted students in the university with seven Phi Beta Kappa, three Goldwater Scholarship winners, and two members of the elite Oregon Six.

There have been some long-awaited changes at the state system level. For the first time, tuition and fees generated by the university will stay at the University of Oregon rather than being distributed throughout the state system. After a phase-in period, this should result in significantly more funds for the university, and ultimately, the Department. We continue to be grateful for your generous contributions to the Chemistry Endowment Fund. These unrestricted funds continue to provide us with the flexibility we need to meet the challenges we face. Combined with increased funding from the university, we plan to move forward with faculty recruitment, space renovation, and curriculum updates.

One of the teaching innovations we plan to enhance this year is our "Green Organic Lab." This course, initiated by Jim Hutchison and Ken Doxsee last year, minimizes the use of organic solvents and other materials that represent a potential environmental and disposal problem. The course was given to a small group last year and received rave reviews from students and from educators at a recent conference. This year we will increase the number of students taking this course and produce the first laboratory manual for the course. We hope to eventually convert the large organic laboratory to this "green" version.

In addition to her numerous professional honors, Professor Geri Richmond has been appointed to the State Board of Higher Education. She is the first university faculty member to serve on the board. She will provide a much needed faculty perspective for this group.

Besides the enjoyment of greeting the graduating class and their family members at this year's commencement, we had the great pleasure of hosting Charles Jacobs, class of 1934. For the occasion, he gave a wonderful short speech to the graduates and among other things reminded them of the importance of regular donations to the Chemistry Department. Who am I to contradict such a distinguished alum?

Sincerely Yours,

Rick Dahlquist.

Mortar Board Awards

Chemistry Instructors win Lion's Share

Instructors Jim Long, Deb Exton and Ralph Barnhard

UO students selected chemistry faculty as their favorite faculty on campus three months in a row. Instructors Ralph Barnhard, Deborah Exton, and James Long received the Professor of the Month Award from the campus chapter of the National Mortar Board during the '98-'99 academic year.

Instructor Deborah Exton was about to launch into the exciting details of acid-base titration when committee chair Andrea Sieg came to the front of her class and presented her with the award. "I was surprised and very honored," she said. And a little embarrassed by all the attention.

Exton was praised as an "excellent teacher," who is "always willing to help," and is generous with her time. Students see her as someone who cares about them and advocates on their behalf.

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. The faculty member with the most votes wins. Chemistry faculty won three out of seven awards this year.

"To receive the award in the classroom is a real kick", says Long, who along with Barnhard, has received the honor three times. Students noted that Long is passionate about teaching and he's "good at conveying difficult ideas in a fun and easy way." An instructor at Oregon since 1978, Long finds teaching fulfilling all by itself. But having someone recognize your efforts is extra special - like frosting on the cake. "And it's really good frosting, too."

"We're doing something right."

Barnhard was lauded as one who "leads a crowd of 400 unlike anyone I've ever seen, keeping everyone awake and engaged." He was also praised for his enthusiasm and his ability to stimulate interest in the subject matter. Thrilled to win the award yet again, Barnhard had this to say about the department's success: "We're doing something right."

Four other chemistry faculty received votes from students: Paul Engelking, Michael Haley, James Hutchison, and Mark Lonergan.

- L. Ritzow

Birthday Bash An Honor

A symposium honoring the 80th birthday of Professor **Virgil Boekelheide** was held Monday, June 21st in Portland. Boekelheide, who has been with the department since 1960, was praised as a leader in chemistry and the department. He was an instrumental figure in the rapid development of the chemistry of novel aromatic molecules over the past forty years. "I could think of no better tribute to the man and his immense scientific contributions than a symposium of lectures from his contemporaries, collaborators, colleagues, and friends," said Associate Professor Michael Haley, who organized the event.

Sponsored by Fuji Silysia Chemical, a long-time supporter of the department, the symposium was part of the Northwest Regional Meeting of the American Chemical Society. The line-up featured eleven world-renowned chemists including Reg Mitchell, Tetsuo Otsubo and Victor Snieckus. Long-time friends Klaus Hafner, Henning Hopf, Emanuel Vogel also took to the podium. Some speakers came from as far away as Europe, Canada and Japan to praise the work and the man they've known for years.

"It was a very nice occasion and it was great to see all those people again," said Boekelheide. Lectures were mixed with discussions of chemistry and anecdotal tales and pictures of Boekelheide, which added to the celebratory atmosphere.

- M. Haley/L. Ritzow

Chemistry Professor Appointed to State Board

Geri Richmond gets the honor

UO Chemistry Professor Geraldine Richmond has been selected by Oregon Governor John Kitzhaber to become the first active faculty member on the State Board of Higher Education. Richmond will replace Esther Puentes of Salem, who recently vacated her seat. Her term would expire in one year.

Jack Liu

Richmond's pioneering research has focused on using laser techniques to study chemical bonds and reactions. She is currently chair of the physical chemistry division of the American Chemical Society and chair of the Department of Energy Basic Energy Sciences Advisory Committee. She has been a mentor and role model for women in science. "She's well-respected in her field and I think she will be a good addition to the Board," said Katy Coba, Director of Executive Appointments for the governor's office.

"She's well-respected in her field and I think she will be a good addition to the Board," said Katy Coba, Director of Executive Appointments for the governor's office.

Richmond's 14-year tenure at Oregon has been filled with awards and honors and she has earned the respect of students and faculty as a gifted scientist and teacher. Last year she was named Knight Professor of Liberal Arts and Sciences. She received the Presidential Award for Excellence in Science and Engineering Mentoring in 1997. In 1996, the American Chemical Society awarded her the Francis P. Garvin - John Olin Medal, a great honor in the science community.

"I'm terribly honored to be the first active faculty member to serve on the Board," said Richmond. Legislation passed two years ago allows the governor to nominate faculty to the Board. As the first, Richmond is aware that everyone will be watching to see what she does. "There have been concerns about having an active faculty member on the Board," said Richmond. Concerns that will likely be put to rest during her tenure.

A true team player and stalwart believer in education, Richmond hopes to be a positive influence on the Board and looks forward to working with its members. "I'm not sure I would have accepted this position if it weren't for the great respect I have for all the people involved." Being on the Board presents a huge time commitment. Although the Board meets once a month, the preparation is considerable. "There's a tremendous amount of reading material," said Richmond. But like all the responsibilities she has, Richmond is excited and honored to be a part of something larger than herself. And the system of higher education in Oregon will be better for it.

- L. Ritzow

TELL A TALE

to your classmates in Chemistry News.

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Remembering Dick

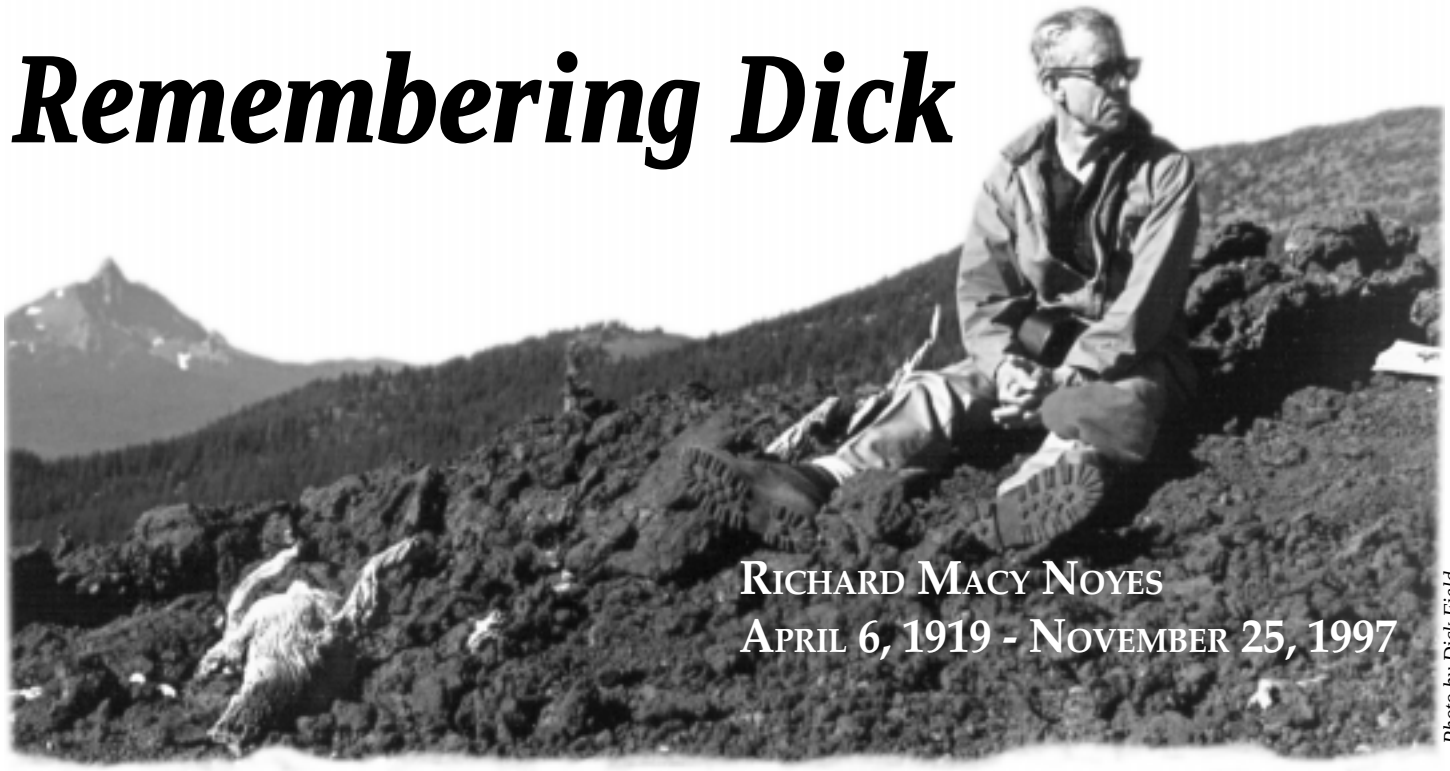


Photo by Dick Field

by Richard J. Field and John A. Schellman

This story is adapted from the full-text version, published in "Biographical Memoirs," Vol 77, The National Academy Press, Washington, D.C., 1999. Chemistry News would like to thank Dick Field and John Schellman for sharing this tale.

Richard Macy Noyes was an exceptional physical chemist, who dedicated his abundant personal and intellectual abilities to making the world a better place. He directed his scientific work toward understanding the details of how chemical reactions occur, making seminal contributions in isotopic-exchange processes, the theory of molecular diffusion in solution, treatment of complex kinetics and reaction mechanisms, and most memorably, pioneering work on the mechanisms of oscillating chemical reactions and nonlinear dynamics in chemistry. He participated actively in public affairs, mainly to protect the natural world he loved, promoted international cooperation, and served in administrative and leadership roles here at the University of Oregon.

Dick was born in Champaign, Illinois on April 6, 1919, the son of William Albert Noyes Sr. and Katharine Macy Noyes. He was the fifth of six children of his father, then nearly 62 years old and Chairman of the Department of Chemistry at the University of Illinois. It is rumored that the senior Noyes responded near his 65th birthday to the Dean's discreet inquiry concerning his retirement plans with an invitation to the christening of Dick's younger brother, Pierre, born in 1923, and destined to become a prominent theoretical physicist.

"Having absolutely no imagination, I majored in chemistry."

William A. Noyes Sr. was a dominant figure in American chemistry from 1890 to 1930, and Dick became the fourth descendent of the Massachusetts Puritan leader Nicholas Noyes (1615-1701) to be elected to the National Academy of Sciences in 1977. The other three, all professors of chemistry, being his father, his half-brother, W. Albert Noyes Jr., and a distant cousin, Arthur Amos Noyes. Dick and his father were also elected to the American Academy of Arts and Sciences. The family tradition of scientific excellence and service is further exemplified by noting that all three older Noyeses were president of the American Chemical Society, something Dick himself never aspired to, being somewhat shy personally and preferring to quietly "Think Globally-Act Locally."

Dick entered Harvard College in 1935, shortly after his sixteenth birthday, where, as he occasionally quipped, "Having absolutely no imagination, I majored in chemistry." He and Pierre, who also entered Harvard at 16, both started with "bonehead" chemistry because their father advised them not to take high school chemistry in Champaign, but to wait for Harvard to do it. Dick was one of the top students in the class of '39, graduating *summa cum laude* and a member of the Senior Sixteen elected to ΦBK.

Dick chose to do his graduate work at California Institute of Technology, feeling that it had the strongest department in physical chemistry in the country at that time. He chose not to work with Linus Pauling, the dominant Cal Tech figure in physical chemistry because, "I was interested in chemical reactions rather than structure." Dick instead did his Ph.D. with Roscoe Gilvey Dickinson, who had followed A. A. Noyes from MIT and pioneered X-ray crystallography at Cal Tech. Dickinson was interested in chemical kinetics and mechanism, and worked in close contact with W.Albert Noyes, Jr., a pioneer in photochemical reactions.

Dick finished his Ph.D. in 1942 under the pressure of WWII, working mainly on the kinetics of the simultaneous *cis-trans* isomerization of diiodoethylene and its exchange with iodine. He made some of the very first radioisotope exchange-kinetics experiments, carried out using very small samples of unknown isotopes of iodine obtained from a Berkeley cyclotron.

The war kept Dick at Cal Tech until 1946 as Temporary Instructor and Research Associate, mainly involved with the analytical and physical chemistry of nitrocellulose smokeless powders. He also systematically expanded personal and social interests during his seven years in Pasadena, developing an interest in folk dancing, and focusing his intense devotion to the outdoors. He joined with friends to buy an ancient Ford for trips to the mountains, made a number of climbs in the Sierra-Nevada, and became deeply involved with the Sierra Club. He met, and in 1946 married, Winninette Arnold, a chemist and daughter of a prominent geologist.

The newlyweds left California for New York City to begin his independent academic career as Instructor of Chemistry at Columbia University. His early work there was built upon I_2-exchange kinetics. This path quickly led him to consideration of the fundamentals of molecular diffusion and diffusion-controlled reactions in solution. He and graduate student Fred Lampe concluded in 1954 that two geminate radicals produced in a primary photochemical event must initially be lodged within a "solvent cage," and that a competition must exist between their recombination and diffusion out of the cage in order to participate in secondary reactions. He then extended the cage concept by asking whether it exists if two radicals are close, even if not geminate, leading him to fundamental new insights into the process of diffusion in solution. The capstone of this work was his 1961 review of molecular diffusion in the first volume of *Progress in Reaction Kinetics*. It remains today a fundamental resource, receiving about 20 citations annually, 36 years after its appearance.

Dick returned in the mid '50s to Roscoe Dickinson's photochemical space-intermittency suggestion. In 1957 he became among the first to solve numerically a reaction-diffusion equation on a digital computer, and to undertake (prior to laser technology) the very difficult experimental problem of projecting sharply focused leopard and tiger patterns of light into a reactive solution. This effort was continued at the UO and initiated his long collaboration with Dick Field.

They took up backpacking in the Appalachian Mountains long before it was fashionable.

Dick and Win were warmly regarded at Columbia. They were notable for their friendly social manner, close interactions with and concern for students, a broad array of scientific visitors, and an interest in travel and worldwide customs and affairs. Dick had an abiding commitment to world peace, acquired from his father. He was a charter subscriber to the *Bulletin of the Atomic Scientists* and a regular participant at the annual meetings of the NAS Committee on International Security and Arms Control. He and Win spent a sabbatical year on a Guggenheim Fellowship at Leeds, UK in 1955-6 after being tenured at Columbia.

But New York City did not succeed in urbanizing the young couple. They took up backpacking in the Appalachian Mountains long before it was fashionable, and thus required Win's homemade equipment. They made a systematic effort to reach the highest geographical point of each of the contiguous 48 states, an RMN-like endeavor if there ever was one. They missed the influence and activities of the Sierra Club, so Dick decided to bring the Sierra Club to New York. He was instrumental in the founding of the Atlantic Chapter of the Sierra Club (now the New York Chapter). Later he chaired the Northwest Chapter (now split into state chapters) and established Eugene, OR as the first local subdivision of the Sierra Club.

Despite these efforts, life in New York City was confining. Happily for all, the University of Oregon at the same time was undertaking the construction of a world-class Department of Chemistry and had identified a group of outstanding younger people to build that department, four of whom went to Oregon and were eventually elected to the National Academy of Sciences. Dick was one of these, and in 1958 eagerly accepted the position of Professor of Chemistry.

At Oregon, Dick continued his work on various aspects of molecular diffusion and isotopic-exchange kinetics, as well as mechanistic studies in related systems. He began new fundamental work on the thermodynamics of ion-formation and made a major thrust into the reactions of diatomic molecules. But much of his time and energy in the '60s was spent in administration of a rapidly growing department. He was acting Head of the department in 1960-61 and Head in 1963-4 and 1966-8.

Continued on page 8

By 1969 the combination of administrative work, the steady deterioration of Win's health from diabetes (leading to her death in 1972), the development of fast direct methods in chemical kinetics, a global and local shift of interest to modern spectroscopic investigation of biochemical systems, some bad luck, and perhaps even his independence, left his research running down. The reactions of diatomic molecules he thought to be concerted turned out to be mainly orbital-symmetry forbidden and probably radical or even heterogeneous in nature, making them of less theoretical interest. Photochemical space-intermittency is excruciatingly difficult to apply broadly, and he had pushed the diffusion work about as far he could without taking into account the discontinuous nature of solvents. Dick and Win were putting increasing time and effort into Sierra Club activities, especially the eventually successful effort to have French Pete Valley incorporated into the Three Sisters Wilderness.

But a scientific challenge appeared in 1969 which Dick's 30 years of work in complex reaction mechanisms and reactive diffusion had perfectly suited him to meet: the Belousov-Zhabotinsky (BZ) Reaction. Starting with elucidation of the BZ chemical mechanism in 1972, he pioneered and solidified an entirely new area of physical chemistry over the next 25 years: oscillating chemical reactions. His introduction of the Oregonator mathematical model of the BZ reaction in 1974 forged the connection between oscillating chemical reactions and the burgeoning theoretical area of nonlinear dynamics, and it allowed the BZ reaction to become and remain today the workhorse and center of focus of research in both areas. Over half of his 208 scientific publications are in this area and appeared after his 50th birthday.

In January 1973, Dick married Patricia Harris, a well-known developmental biologist who shared his devotion to science and to environmental matters. She was working as faculty at Oregon State University when they met. Dick served a final long term as head of his department in 1975-8. He and Pat spent 1978-9 and 1982-3 (Alexander von Humboldt Fellowship) at the Max Planck Institute für Biophysikalische Chemie, Göttingen, a center where they both could follow their scientific interests. He formally retired in 1984, but he and Pat continued to travel around the world as Dick continued to serve as an international leader in nonlinear dynamics until near the end of his life. A Festschrift issue of *The Journal of Physical Chemistry* dedicated to Dick and his work marked in 1989 his seventieth birthday. Sadly, a series of strokes beginning in 1992 left him increasingly incapacitated, despite his heroic efforts to keep going. He passed away on November 25, 1997.

Dick Noyes Symposium

SATURDAY, OCTOBER 10, 1998

Clockwise from left:

Speaker Dick Fields, Pat Noyes, the symposium lunch crowd, and Speaker John Tyson.

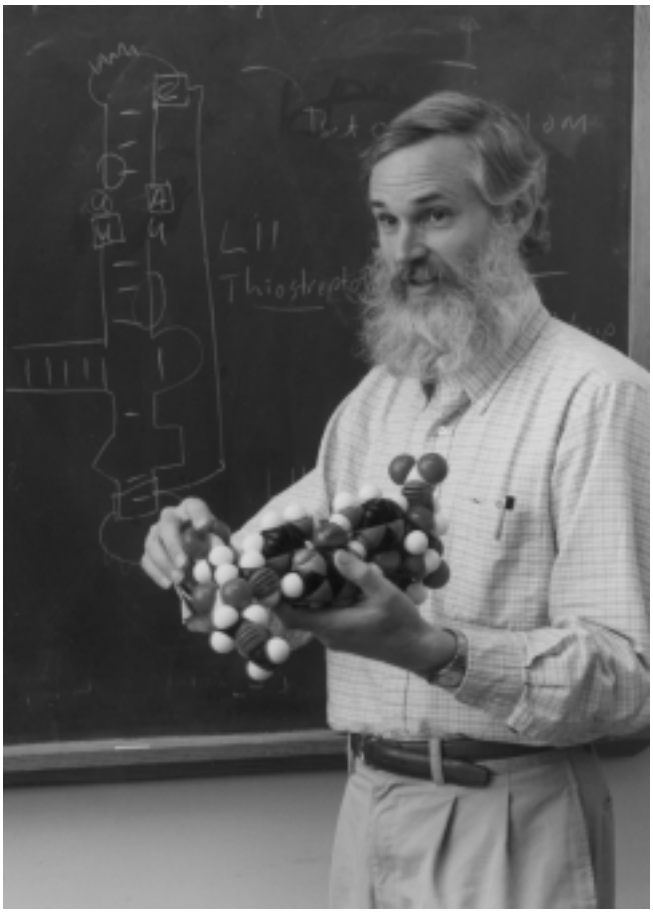
David Draper
1999 Alumni Achievement Award

Winners of the Alumni Achievement Award are a select group chosen for this honor in recognition of professional and personal achievements that exemplify the Oregon spirit and traditions of leadership and excellence. The award, in the College of Arts and Sciences, was established in 1989 by Dean Donald R. Van Houten. This year's award will be presented at the Arts and Sciences' Profiles in Achievement Banquet in November.

Johns Hopkins Professor David Draper is the recipient of this year's Alumni Achievement Award in Chemistry and he has the UO and RNA to thank for it. Draper, a graduate student in Pete von Hippel's lab, received his Ph.D. in 1977. He joined the faculty at Johns Hopkins in 1980 and continued to research the elusive RNA he began studying at Oregon.

While at Oregon, Draper took advantage of the flow of ideas between labs and disciplines. "It was a good time to be in chemistry and in the Institute (of Molecular Biology)". He began working with RNA and found it easy to begin collaborating with faculty and students in nearby labs. "In Science II [*now Klamath Hall*] there were people from chemistry, biology and physics all in one place thinking about the same problems." Collaborations just happened. "It was a pretty unusual place," Draper said. Seeing the benefits of such joint research, Draper sought to continue research across disciplines when he set up his own lab at Johns Hopkins. "I consciously tried to develop my own career in the same way."

Though few chemists were studying RNA in those days and techniques to study it were limited, Draper was determined to unlock some of the mysteries of its structure. During his 18 years at Johns Hopkins, Draper has focused his research on the structure of RNA, how it functions, and how proteins bind to it. Exciting research has centered on the protein L11, which binds to RNA and looks similar to homeodomain proteins in DNA. Draper's findings suggest that DNA may have adopted binding proteins from RNA, with slight modifications.



More recent work in the Draper lab has focused on detailing the tertiary structure of RNA from the ribosome (the piece of cellular machinery that carries out protein synthesis). Draper and fellow researchers published an article in the May issue of *Science* detailing the first three-dimensional picture of ribosomal RNA tertiary structure. Draper's lab worked to create a stable RNA crystal and capture its image with the help of xray crystallographer Eaton Lattman, a fellow professor in a biophysics lab at Johns Hopkins. The image represents the first atomic level look at a ribosomal protein - RNA complex.

"In Science II there were people from chemistry, biology and physics all in one place thinking about the same problems." Collaborations just happened. "It was a pretty unusual place."

Draper has enjoyed a distinguished career at Johns Hopkins, where he has served as faculty, department head and teacher over the years. His research has been supported largely by the National Institutes of Health (NIH). In 1996 NIH honored him with the MERIT award. The prestigious award provides flexible funding for ten years and has already allowed him to focus on his favorite subject - RNA.

- L. Ritzow

Internship Master's Program
Enjoys Fruitful First Year

"I'm 22 and I make more than my parents," Jennifer Petersen reflected recently. Recently hired as a Process Engineer at Hyundai, Petersen owes a certain amount of her success to an innovative internship program at the University of Oregon that combines academics and on-the-job training. She graduated this June with a master's degree in chemistry, job experience - and a new job in a competitive industry that pays over $40,000 per year.

Launched by the Material Science Institute (MSI) last summer, the Industrial Internship Master's Program combines classroom instruction and laboratory work with a six- to nine-month industrial internship. Students can expect to earn 30 credits and $2,000 to $3,000 a month during the internship portion of the program. With the addition of 12 credits in physics or chemistry, students receive a master's degree. Participating companies include Mitsubishi Silicon, LSI Logic, Hyundai, Forrest Paint, Planar and Intel. Beginning this summer, students can choose to study semiconductor processing or polymer science. A doctoral version of the program was launched in June.

It's a mutually beneficial arrangement for companies and students, says Chemistry Professor Dave Johnson, one of six MSI faculty who put the program together. Companies see the students as potential employees they get for nine months on a trial basis. While industry is in need of qualified applicants, students have the opportunity to get hands-on experience and a step up in the job market.

The MSI program was developed in response to feedback from recent graduates as well as from regional industrial partners. Johnson says this feedback defined the need to augment the basic science curricula to include course modules that more specifically prepare students in physics and chemistry to become effective problem solvers in semiconductor manufacturing and polymer synthesis. "Our focus is not teaching them exactly what they need to know; our focus is teaching them how to apply the fundamentals they've been taught as undergraduates to solve problems in industry," said Johnson.

Student at work in the MSI lab.

"We've had an incredible response from industry and we've only solicited Oregon companies so far."

Jessica Daniel, a chemistry student who's interning at Planar in Portland, says the program helped her get into the R&D department at the flat-panel display manufacturer. She tried job hunting first and found most companies weren't interested in someone with a chemistry degree and no experience. Most students could learn the job eventually, says Johnson, but the job-specific training they received in the MSI program cuts down on the financial commitment companies have to make before workers are productive. Getting your foot in the door may be the most important step to getting a job later. "It's not so much what I learned in the program as the connections I made," says Daniel.

Petersen, the process engineer, said one of the best things about her internship was Hyundai's willingness to give her responsibility early on. "They weren't treated as students, they were treated as new hires," says Johnson. And sometimes there's a big difference, as physics intern Lucas Wilms found out when he was asked to run his department at Hyundai for a week while his supervisor was out of town. But the responsibility didn't phase him. "That was fun," he said. Problem solving was an important part of surviving the week. "It's one of the best things physics teaches you."

"When we first approached industry, they were excited but cautious," said Johnson. "We originally received eight offers for internship positions. Now our partners in industry are willing to absorb as many as 30 interns. We've had an incredible response from industry and we've only solicited Oregon companies so far."

Jacobs Endowment

Family gives $100,000 to department

Charles Jacobs, a chemist and member of an Oregon pioneer family has established a $100,000 endowment to provide a source of income to support the recruitment and retention of faculty in the UO Chemistry Department. *The Charles J. and M. Monteith Jacobs Faculty Fellowship Fund in Chemistry* is one of the largest cash gifts ever received by the Department. "These funds are particularly hard to come by and, because of their flexibility, are often worth much more than their dollar amount in terms of their impact in achieving the necessary results" noted Peter H. von Hippel. The endowment will be administered by the UO Foundation.

The gift preserves three names in the future of the department: Charles, his brother, Malcolm Monteith "Monty" Jacobs, and their mother's maiden name, Monteith. The Monteiths are Oregon Pioneers who settled in the Willamette Valley and founded the city of Albany in the 1840's. Monty Jacobs was born in Portland and attended the UO in the late 1920's. He died in 1998 (see In Memoriam).

Charles Jacobs was also born in Portland in October 1912, and was raised there. In 1930 and 1931 he attended the UO. At that time there was little research in science at the UO, so Charles transferred to Stanford University where he majored in chemistry and math. He received his BA in 1933 and his MA in 1934 at the age of 21. Based on his scientific publication and scholarship record, he was elected full member of Sigma Xi in 1934.

Charles worked his way through school as an instructor, tutor, and paper grader, but he doesn't remember those years as a grind. He enjoyed his classes and campus activities and has fond memories of classmates and professors. Professor Orin F. Stafford (1906-1941) was his favorite teacher at UO and became an influential advisor.

Charles started his professional career in 1934 at Shell Oil Co. in Martinez, California, as a research chemist. Several industrial positions followed in technical development, marketing, and engineering, including two years as an analytical chemist at Western Sugar Refinery in San Francisco and two years with a printing company, George H. Morrel Inc. in South San Francisco. He spent seven years (1939-1946) with Pacific Can. Co., as a Chief Chemist. He moved east in 1946 and worked until 1964 for a company which eventually became a chemical division of W.R. Grace & Co. He was involved in the development of materials and processes for the packaging industry. He and his wife, Margretta, whom he met at Stanford in 1934 and married in 1937, lived in the Boston area. His work involved technical sales and market development, which required extensive travel, in the U.S. and abroad. In 1964 Charles and Margretta moved to Connecticut and Charles worked for four years as a New Product Manager for American Can Co. in New York City.

Charles Jacobs presented Pamela Tsuruda with the American Institute of Chemists Foundation Award at the Commencement Ceremony June 12, 1999.

When he was 55 years old, Charles decided to establish a consulting business in the packaging industry on an international basis, benefitting from his previous years of experience and contacts in overseas markets. The venture proved to be a success and he continued in it until 1998. In 1980 he moved his home and business to San Diego, California.

Even before retiring, Charles found time to participate in civic affairs and is still active. Two organizations of particular interest to him are the Community Planning Board, where he served for seven years, including a term as Board Chairman, and the Adult Education Center, an affiliate of San Diego State University, where he served on the board for eight years.

When he returned to Eugene for his 65th Class Reunion, Charles briefly addressed the Chemistry Department's graduating seniors. "I have two pieces of advice for you: first, spend less than you earn, and second, to ensure that future students have the advantages that the University has provided you, make a habit of annual donations to the UO, particularly the Chemistry Department. Give what you can, and be sure to do it every year." He also presented the American Institute of Chemists Foundation Award to Pamela Tsuruda at the commencement. After a meeting with the faculty and a tour of the laboratories, Charles noted, "Most alumni don't know that the state of Oregon provides only fifteen percent of the UO operating budget. We really need to get the word out."

News *from All Over*

1930s

Charles Jacobs, class of '34, drove to Eugene to attend his 65th UO reunion after a morning round of gulf in San Diego. Jacobs, a benefactor of the Department, participated in the Chemistry commencement (see p.11)

1940s

Marion E. Hill, BS '48, MS '49, is former Director of Stanford Research Institute Chemical Laboratories and winner of the UO alumni Achievement Award in Chemistry. Hill retired in '84 and lives in Palo Alto,CA.

Marion filled this year with family events and trips to see his three children and many grandchildren. He attended four of their graduations from college, including that of his daughter, Diane, who received her Ph.D. from UC Berkeley.

1950s

Gerald G. Ohlsen, B.A. '55. After leaving the UO, Ohlsen completed his Ph.D. in physics and pursued a career at Los Alamos National Lab until he left to become a lawyer and land developer. He lives in Santa Fe, New Mexico.

1970s

Peter H. Bickert, a Rotary Scholar with Virgil Boekelheide '79-'80, completed his Ph.D. in organic chemistry at the Technical University at Darmstadt, Germany in 1983. The following year, he was a research scholar at Stanford University. He completed an MBA degree in 1988 at Rutgers. Professionally, Bickert worked for Hüls AG, a chemical company, in Germany and the U.S. until 1998, when he took over as president of Phenolchemie Inc. in Atlanta, Georgia.

Since 1990, Bickert has been married to Sabine, an architect. The couple has two children, a son, Yannic (7) and a daughter, Kerstin (4). They attend Atlanta International School and are studying German and English in addition to their other subjects. Beyond family and work, Bickert enjoys an occasional game of golf. (He gave up skydiving in favor of more earthly pursuits). He enjoys reading, and takes particular interest in military history, foreign politics, leadership and decision theory.

Before returning to the U.S. last year to take his new job, Bickert was active in the German Army Reserve as a Lieutenant Colonel.

Christopher Dubay, B.S. '79, received his Ph.D. in medical genetics from OHSU in 1990 after spending six years in the computer industry. He completed postdoctoral research projects on complex genetic disease (e.g. hypertension and diabetes) using animal models in France and England. Dubay returned to the U.S. to develop information systems to support genetic analysis under a National Library of Medicine sponsored fellowship in medical informatics. He is currently an Assistant Professor in the Division of Medical Informatics and Outcomes Research at OHSU, with a joint appointment in the Department of Molecular Medical Genetics. His focus at OHSU is in the field of bioinformatics and genetic information management systems for both research and clinical applications.

Jing-Jer Jwo, Ph.D. '74 with Richard Noyes, is a Senior Professor in the Chemistry department at National Cheng Kung University in Taiwan.

Susan Rottschafer, Ph.D. '70 with John Keana and Hayes Griffith, ran the department's Microanalytical Laboratory. She worked under Chuck Klopfenstein until 1975. After leaving the UO, Rottschafer spent almost 20 years working in the pharmaceutical industry before becoming Associate Director of International Regulatory Affairs at Block Drug Co. in Jersey City, New Jersey. The company manufactures dental and other personal health-care products. Eventually, she retired from Block Drug and is currently a part-time consultant in pharmaceutical regulatory affairs. (E-mail address: susanr@dplus.net).

Diane Simmons, B.S. '73, is working in pharmaceutical R&D for Yamanouchi Pharmaceutical Co. Ltd. of Tokyo. She works in Palo Alto, California.

Brad Wright, B.A. '79. Received his Ph.D. in Organic Chemistry at Ohio State in 1983 and went on to a postdoc position at Yale with Jerry Berso for one year. Wright has been at 3M in St. Paul since leaving Yale and has worked in a number of different positions, including front-line development and research and design. His work has focused on imaging and adhesives. Currently, he is an Intellectual Property Specialist and spends most of his time working on patents.

1980s

Randy Mrsny, a research associate in Hayes Griffith's lab from 1985 -1987 visited campus in March '99 to present his seminar titled, "Pseudomonas Exotoxin: A New Approach for the Targeted Mucosal Delivery of HIV Antigens." Mrsny was head of the Peptide Biology Group for ALZA Corporation from 1987-1990 and is now head of the Drug Delivery/Biology Group for Genentech, Inc. (E-mail address: mrsny@gene.com)

William Houle, Ph.D. '82 with Hayes Griffith, has recently been promoted to Project Manager, InkJet Supplies Business Unit with Hewlett

Packard Company in San Diego. He hasn't taken up surfing yet, but he does spend a lot of time at the beach trying to recover from his new responsibilities. (E-mail: bill_houle@hp.com).

Costi Sifri, B.S. '89, received his M.D. from the University of Rochester in 1995 and then completed his internship and residency in internal medicine at the Hospital of the University of Pennsylvania. Since July of '98, he has been a clinical fellow in the Infectious Disease Divisions of the Massachusetts General Hospital and Brigham & Women's Hospital. This year, he is a research fellow at Harvard Medical School and Massachusetts General Hospital. He plans to study bacterial pathogenesis. "I've grown to tolerate the East, but I miss Oregon terribly," he writes.

Michael Scherz, Ph.D. '89 with John Keana, stopped by recently while vacationing on the Oregon Coast. Scherz studied medicinal chemistry while at Oregon and has recently been promoted at Procter & Gamble Pharmaceuticals to Section Head of Cardiovascular Research. He is responsible for P&GP's research programs in arrhythmia and congestive heart failure. Scherz, his wife Sandy, and their children Mark and Heidi, are living in the endless suburbs of Northern Cincinnati.

1990s

Mike Ansell, Ph.D. '98 with Cathy Page, is working as a postdoc in Professor Michael Sailor's Lab at UC San Diego. Ansell's research focuses on determining the nature of the chromophore in a photoluminescent silicone polymer discovered in the lab a few years before. The material has the potential to replace phosphors containing toxic and expensive activator metals. In the coming year, Ansell plans to apply for teaching positions in a small college.

Chia-Liang Charlie Cheng, Ph.D. Physics '93, with Tom Dyke, is now an Assistant Professor at National Dong Hwa University in Taiwan. Cheng was recently reunited with his wife (Professor Yuh-Yao Lyda Wan, Ph. D. in Art Education at the UO in '93) after both found jobs at NDHU.

Cheng's current research focuses on spectroscopy, surface and materials science using FTIR and Raman spectroscopy. He is particularly interested in single crystal diamond, nano-meter scale diamond and diamond like carbon (DLC).

After completing his Ph.D. in '93, Cheng served as a Research Associate in the Chemistry Department for one year before working as a postdoctoral fellow at the Institute of Atomic and Molecular Sciences in Taiwan and Berkeley. After completing his studies, he accepted a position as an Assistant Professor in the Physics Department at National Taiwan Normal University in Taipei, before moving to Hua-Lien, Taiwan to accept his current position.

Gregory K. Friestad, Ph.D. '95 with Bruce Branchaud, is an Assistant Professor of Chemistry at the University of Vermont. His lab is studying new synthetic methods and asymmetric synthesis of natural products.

Derek Gragson, Ph.D. '97 with Geri Richmond, completed his postdoc at Harvey Mudd before accepting a position as an Assistant Professor at California Polytechnic State University in San Luis Obispo, California. Gragson recently received funding from Research Corporation to set up a laser system for second harmonic studies of polyelectrolyte absorption. He's been working to set up his lab and teach classes. He and his wife, Grace Ann Neff (Page '98), live five minutes from the beach and greatly enjoy living in San Luis Obispo.

Wai Leung Lau, BS '95, undergraduate research with Hayes Griffith, stopped by for a visit on August 23, 1999. Wai is currently a Ph.D. student in the Department of Biochemistry and Molecular Biophysics, University of Pennsylvania.

Jirong Lu, Ph.D. '92 with Frederick Dahlquist, is working as a Project Leader and Senior Scientist at Eli Lilly & Company in Indianapolis, Indiana.

Grace Ann Neff, Ph.D. '98 with Cathy Page, completed a short postdoc at Harvey Mudd. She is currently working in a summer institute for grade school teachers and spends the regular school year working as a lecturer in the chemistry department at California Polytechnic State University in San Luis Obispo, California. She resides there with husband and fellow alum, Derek Gragson (Richmond '97).

Thomas S. Rush, Ph.D. '95 with Warner Peticolas, completed his postdoctoral work at Princeton in 1998. He is now an Assistant Professor of Chemistry at the University of Montana. He teaches physical chemistry and is doing research in protein folding.

Jonathan Sowins, B.S. '98, is working as a Research and Development Assistant at Forrest Paint in Eugene. Sowins spends his time in the powder paint lab, developing better powder paints. He says he feels fortunate to have found such a good job right out of college and enjoys what he does.

Amir Tamiz, Ph.D. with John Keana, '98, is working as a postdoc in Professor Alan Kozikowski's laboratory at the Georgetown University Medical Center in Washington D.C. He is currently working on the design and synthesis of compounds as drugs for their potential use as antidepressants. The work is done through a collaboration with the National Institute on Drug Abuse NIDA, and Zebra pharmaceuticals, Boston, MA.

Paul Wash, B.S. '91, finished his Ph.D. at the University of Nevada at Reno in the spring of '98. He is now a postdoc for Professor Julius Rebek Jr. at the Scripps Research Institute in San Diego working on molecular recognition.

Shuanhbo Yang, Ph.D. Physics '99, with Mike Kellman, will be accepting a new faculty position at the University of Nanjing this fall.

Undergraduate *Research Projects*

A record number of undergraduates participated in research groups this year. We can only feature a sampling here.

Django Andrews
Graduated 6/99
Ashland, OR
Professor Paul Engelking, *Supervisor*

Research Project:
My research has focused on the determination of energy level distribution in CS_2 via laser-induced fluorescence. We are using the 248nm line of a KrF excimer laser to pump a dye laser, which is then passed through the sample. The subsequent fluorescence is focused into a monochromometer and the signal read with a photon detector.

I will pursue a Ph.D. at the University of Colorado, Boulder.

Todd Blevins
Graduation date: 6/00
McMinnville, OR
Professor Mark Lonergan, *Supervisor*

Research Project:
My current research project involves characterizing a specific conducting organic polymer - poly(3-Octylpyrrole). The Lonergan group focuses on finding creative ways of combining such polymers with each other and more classical materials (metals and semiconductors) to form interface devices of unusual or enhanced character. The as-synthesized polypyrrole polymer used in Lonergan's tunable diode devices is unfortunately insoluble and, therefore, difficult to characterize (solution phase UV-Vis, GPC and NMR would be advantageous). By adding the Octyl- side chain to the conjugated polymer backbone, polymer solubility in organic media can be increased.

I plan to extend my examination of this conducting polymer system to the nanometer scale.

Matthew Clifton
Graduated 6/99
Evergreen, CO
Professor Rick Dahlquist, *Supervisor*

Research Project:
Research in the Dahlquist lab focuses on several signal transduction proteins in E.coli. My research is concerned with the interactions between two of the proteins, CheA and CheY. By synthesizing ^{15}N labled CheA, I can measure its interactions with CheY by using multidimensional NMR. As CheY is added slowly to the reaction, I can observe chemical shifts that are characteristic of the interactions between the two proteins. By using E.coli as a model system, we can hope to understand the complex process of signal transduction better.

Next year I will be attending Purdue University in their Biochemistry and Molecular Biology Program. I will be pursuing my interests of structural biochemistry in relation to viruses.

Elizabeth Cogan
Graduated 6/99
Eugene, OR
Professor O. Hayes Griffith, *Supervisor*

Research Project:
My work in the Griffith lab is mainly concerned with the kinetics of Phospholipases C. I have been working mainly on the development of novel assay methods for studying these kinetics. Phospholipases play an important role in cellular signal transduction. I have been looking at two different approaches to the development of simpler, less expensive assays. The first was a solution-based phosphate assay, which I also automated. The second is a fluorescence based thin layer chromatography assay.

Following graduation, I'll be entering the M.A. program at the UO in French so that I can be accepted to the doctoral program in Chemistry at the Universite de Paris VI.

April Dowdy
Graduated 6/99
Pleasant Hill, OR
Professor Bruce Branchaud, *Sup.*

Research Project:
Deoxypancratistatin is an amaryllidacae alkaloid that shows promising anti-tumor activity. It is a natural product that is isolated in low yields from Hawaiian Daffodil bulbs. Because of pancratistatin's promising medicinal properties, there is interest in trying to synthesize it for use in clinical trials and perhaps for clinical use in the future. Several groups have undertaken this task. However, the syntheses that have been completed are not practical or cost effective. We have proposed a convergent route to the total enantiospecific synthesis of deoxypancratistatin starting from D-glucose, an inexpensive, readily available starting material.

I will attend the University of Notre Dame in the fall and eventually plan to go into the pharmaceutical industry and make more drugs.

Tyler Grassman
Graduation date: 6/00
McMinnville, OR
Professor Andrew Marcus, *Supervisor*

Research Project:
I'm studying the dynamics of a novel new drug delivery system developed by Alkermes, Inc., which makes use of water-soluble polymeric microspheres encapsulating lyophilized drug particles. We wish to understand the correlation of the dynamics of the polymer matrix with that of the diffusing drug particles themselves. To do this we are employing specially synthesized drug delivery devices containing fluorescent dye tagged protein in place of the drug, and using both video fluorescence microscopy and fluorescence recovery after photobleach (FRAP) methods of analysis.

I plan on going to grad school after I graduate, and eventually pursuing a career in research industry.

Mark Johnson
Graduated 6/99
Salt Lake City, UT
Professor Dave Johnson, *Supervisor*

Research Project:
I have been measuring the parameters (layer thickness and nucleation energy vs. composition) in the binary iron antimonide $FeSb_3$. Now I have been adding a filler element, La, to observe the effects it has on nucleation energy vs. composition.

My future plans are to take a year off to go skiing in Vail, Colorado and then attend medical school. I am looking into M.D.-Ph.D. programs because I would like to be involved in medical research in the future as a practicing physician. My research experience has definitely influenced my plans to pursue research in my future profession.

Nisha Makadia
Graduation date: 6/00
Professor Alice Barkan (Biology), *Supervisor*

Research Project:
I have been conducting research in the Barkan lab since the fall of '97. During this time I have worked on two projects. My first project involved investigating the role in bacteria of a highly conserved gene that functions in a novel protein translocation mechanism in chloroplasts. My job was to "knock out" the homologous gene in cyanobacteria in order to observe what effect it would have on the organism.

The project I am currently working on involves using reverse genetics to probe the role of a gene that functions in the targeting of proteins to the thylakoid membrane. Two versions of this gene exist within the maize genome. I am currently performing an RNAse-protection to determine the levels of active transcription of the two versions of this gene. I will then use this information to search for a mutant plant in maize containing a transposon insertion within the more actively transcribed version of this gene.

Continued on page 16

Joseph Ross
Graduation date: 6/00
Albany, OR
Professor Diane Hawley, *Supervisor*

Research Project:
I'm researching the interactions between wild-type and mutant RNA Polymerase II TATA-Binding Proteins (TBPs) and both consensus (TATA) and nonconsensus sequences (TGTA, etc.) on DNA which are bound by the TBP to initiate transcription. My summer project, funded by an HHMI Grant, will be to attempt to determine the role of the N-terminal domain of the TBP in regulating transcription. I'm really intrigued by transcription and translation, and the production of genetic mutations which lead to certain conditions.

I plan to attend medical school for a joint degree (MD/PhD) and eventually do research on genetic diseases.

Rachel Smith
Graduated 6/99
Eugene, OR
Professor Jim Hutchison, *Supervisor*

Research Project:
I've been working with a quartz crystal microbalance (QCM) to study the stability of self-assembled monolayers (SAMs) on gold. I've been working on two aspects of SAM stability: how they behave when exposed to high temperatures and different solvents. I became interested in studying the stability of SAMs because SAMs have such promise in materials science; thus, I wanted to fully explore the physical behavior of a material that can be employed in technological applications.

In the fall, I will be attending graduate school at Penn State University, working in materials chemistry.

Jeffrey Salerno
Graduated 6/99
Eugene, OR
Prof. Brian Matthews (Physics), *Sup.*

Research Project:
In our lab we use x-ray crystallography to determine the three dimensional structure of proteins. I have been working with the DNA replication machinery from the bacteriophage T4. This includes the enzymes helicase, primase, and the loading clamp. Recently I was able to crystallize a truncated version of the primase enzyme. Four crystal forms have been characterized and preliminary data has been collected for one of these crystal forms. I found this particular project interesting because it investigates processes that are central in the replication of all life. After graduation I plan to ride my bicycle across the country or live like Thoreau somewhere in Oregon.

In Memoriam

Joel E. Keizer died May 16, 1999. Born August 31, 1942, Keizer received his Ph.D. under the direction of Terrell Hill in 1968. After leaving Oregon, Joel accepted a postdoctoral position with Battell Institute in Columbus, Ohio and later moved on to join the faculty at UC Santa Cruz. Keizer is remembered for his contributions to chemistry and the passion and joy he brought to his work.

Owen Meredith Wilson, UO president from 1954 to 1960, created the Institute of Molecular Biology during his tenure. He died November 7, 1998 of a malignant brain tumor. Born in Mexico in 1909, Wilson received his B.A. from Brigham Young University and his Ph.D. from the University of California. He was a faculty member at Brigham Young, the University of Utah and the University of Chicago. He later worked for the Ford Foundation as secretary for the Fund for the Advancement of Education and then came to the UO to serve as the ninth president. Wilson is credited with mandating racial integration of Greek system on campus, opening the UO Museum of Art to the public, and restructuring the graduate school. Wilson left Oregon to become president of the University of Minnesota, leaving that post seven years later to move to Stanford California and become director of the Center for Advanced Studies of Behavioral Sciences. He retired to Eugene in 1975.

Malcolm Monteith "Monty" Jacobs died after an extended illness on March 27, 1998 in Santa Cruz, California. Monty Jacobs was born on June 18, 1909 in Portland, Oregon. He attended the UO for two years and was a member of the UO tennis and basketball teams. He finished his studies at the University of Nebraska before returning to Portland where he established a beauty salon supply business. In 1936 he

married Esther Jackson, who predeceased him in 1996.

In 1942 Monty joined the US Army and served in the Railway Battalion in Europe. He saw action in the Battle of the Bulge and earned three combat ribbons. After the conflict ended, Monty served briefly as an army courier in Europe before returning to his business in Portland. He retired in the 1970s and moved to Santa Cruz. Monty retained an interest in the UO and was a benefactor of the department. His name will be remembered in perpetuity by the *Charles J. and M. Monteith Jacobs Faculty Fellowship Fund in Chemistry*, an endowment established recently by his brother, Charles Jacobs (see related story, pg. 11).

Faculty *News & Awards*

Kenneth Doxsee was promoted to Full Professor. Doxsee will continue his work this year as the NSF off-site program officer for the Organic Chemistry programs.

Michael Haley was promoted to Associate Professor.

Jim Long, Deborah Exton, and **Ralph Barnhard** all won Mortar Board Professor of the Month Awards last year. See related story, pg. 4.

LeRoy Klemm was named as Outstanding Scientist of the Year by The Oregon Academy of Sciences. Dr. Klemm was recognized for new applications of the intramolecular Diels-Alder reaction, a technique used to prepare complex compounds. Klemm's research has focused on thienopyridine chemistry, which may lead to drugs that will fight malaria and Alzheimer's disease. Dr. Klemm has been at the UO since 1952 and has published 175 papers in his career, 37 since his "retirement" in 1985.

Jim Hutchison, was recently selected as an Alfred P. Sloan Research Fellow (April '99). Hutchison, an assistant professor with the department, was awarded the two-year, $35,000 fellowship for his work with miniature electronic circuitry. Cutting-edge technology in the Hutchison lab focuses on minute circuits that could make electronic devices, such as computers, smaller and more portable. The fellowship allows recipients the flexibility to fund research they deem important.

Hutchison was also nominated as a Camille Dreyfus Teacher-Scholar and awarded $60,000. The award recognizes the recipient's dedication to teaching while continuing to demonstrate outstanding contributions to science.

The UO Student Affiliates Chapter of the American Chemical Society received honorable mention from the ACS for its 1997-98 program. Assistant Professors **Jim Hutchison** and **Mike Haley** were honored for their work as faculty advisors.

Andy Marcus, assistant professor, was awarded a $255,000 National Science Foundation's CAREER Award for continuing research on the behavior of confined complex fluids and his proposal to broaden chemistry education at the University level through the use of multidisciplinary themes. The award will be funded over three years. Marcus also received a Petroleum Research Fund grant from the American Chemical Society. The $25,000 grant was designed to help young faculty members with self-conducted research.

The Exceptional Opportunity Grant by the M.J. Mudock Charitable Trust was awarded to Marcus this year. The $50,000 grant will help pay for instrumentation and a postdoctoral student to support research to develop novel optical approaches to study metabolism inside living cells.

Marina Guenza, senior research associate, has received a $183,000 grant from the National Science Foundation and a $25,000 grant from the American Chemical Society to fund her research in correlated many-chain dynamics.

Professor **Cathy Page** recently received a National Science Foundation grant through the Professional Opportunities for Women in Research and Education Program. The $33,000 supplement to her regular NSF grant ($288,000 for three years) was one of just 37 of the 138 POWRE proposals that were funded this year. Page will use the funds for her work with thin films. Her grant is titled "Self-Assembly of Inorganic/Organic Multilayer Thin Films: Novel Chemical Systems for Self-Assembly and Incorporation of Nonlinear Optical Properties."

Geri Richmond, faculty at the UO since 1985, was recently appointed to the State Board of Higher Education. Richmond is the first active faculty member to serve on the Board. *See story pg. 5*

Professors **Jim Hutchison and Ken Doxsee** recently implemented an undergraduate sequence, Green Organic Chemistry Laboratory. The new lab emphasizes environmentally benign (green) chemical synthesis and takes into account environmental considerations in the selection of reactants and reaction conditions. Green chemistry is growing in importance as industrial and academic researchers become aware of the environmental and economic benfits of environmentally benign methods.

The goals of the lab are to teach students core laboratory skills while demonstrating, first hand, the benefits of green chemistry. Green experiments will improve safety, allow for the routine use of macroscale techniques, and provide an ideal context for the discussion of chemical safety.

The first class was offered last fall to 24 students, with enrollment being pushed to 40 students this fall. For more details on this innovative new course go to the class website at http://darkwing.uoregon.edu/~hutch/ch337g/

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SATURDAY, JUNE 12

Commencement '99

GRADUATES

Chemistry
Django Andrews
Eric Bercot
Ryan Bishop
Jeffrey Choate
Elizabeth Cogan
Jesse Dambacher
Ossama Darwish
Joshua Goldberg
Athena Klock
Thomas Lau
Lay Min Lee
Thomas Northcutt
Alexander Rajeff
Mollie Wynveen

Biochemistry
William Birdsong
Michael Braden
Matthew Clifton
Richard Cook
Jennifer Ann Davis
Manuel DeLeon
April Dowdy
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Tracy Hardwick
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Leland Mason
Alison Mecklam
Hao Nguyen
Eric Pacini
Steven Park
Julie Richman
David Rubin
Jeffrey Salerno
Rachel Smith
Pamela Tsuruda
James Tung

Masters of Science
Darsi Adams
Christopher Cooney
Michelle Knowles
Jennifer Peterson
Brooke Taylor

Master of Arts
David Kimball

Doctorate
Michael Ansell
Lara Baxley
Leif Brown
Cory Bystrom
Robert Davenport
Charles Foulds
Nadine Gassner
Robert Gilbertson
Lana Grubb
Britt Lindfors
Edward Michelini
Tracy Norris
Peter Rupert

AWARDS

Chemistry Major with Honors
Django Andrews
Elizabeth Cogan
Richard Cook
Tracy Hardwick
Thomas Lau
Pamela Tsuruda
James Tung

University Academic Honors

Summa Cum Laude "Highest Honors" (top 2%)
Tony Huynh
Eric Pacini

Magna Cum Laude "High Honors (top 5%)
Pamela Tsuruda

Cum Laude "Honors" (top 10%)
Eric Bercot
Elizabeth Cogan
Richard Cook
Joshua Hanna
Tracy Hardwick
Jeffrey Salerno

Phi Beta Kappa - Oregon Six
Todd Blevins
Eric Pacini

Phi Beta Kappa
Elizabeth Cogan
John Condie
Tracy Hardwick
Jeffrey Salerno
Pamela Tsuruda

Biochemistry Achievement Award
Jeffrey Salerno

Inorganic Chemistry Achievement Award
Elizabeth Cogan

Organic Chemistry Achievement Award
Eric Pacini

Richard M. Noyes Physical Chemistry Achievement Award
Tony Huynh
Andrea Sieg

American Chemical Society Analytical Chemistry Award
Thomas Northcutt

American Institute of Chemists Foundation Award
Pamela Tsuruda

Bill Bowerman Fund Scholarship named for Professor Mark Lonergan
Todd Blevins

ACS Certified Degree
Athena Klock

Goldwater Scholarships
Todd Blevins
Nish Makadia
Benjamin Paxton

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