the university of texas at austin

fall 1998

CHEMICAL Compositions

chemistry & biochemistry
departmental newsletter

The Robert A. Welch Foundation

Foundation established in 1954 supports chemistry research in the State of Texas

Robert A. Welch

The Robert A. Welch Foundation is well-known to all those who have passed through the Department of Chemistry and Biochemistry. Indeed, in recognition of the enormous contributions the Foundation has made to UT-Austin through the years, we are housed in Welch Hall, a naming that occurred in 1974. Norman Hackerman is currently serving as the Chairman of the Foundation's Scientific Advisory Board. The Board is presently comprised of eight eminent scientists, five of whom are Nobel Laureates. Norm joined our faculty in 1945, served as chairman of the Department from 1952-1961 and as chief academic officer of the university from 1963-1970. After a stint as President of Rice University from 1970-1985, Norm returned here as Professor Emeritus of Chemistry and Biochemistry. He graciously consented to write a brief history of the Foundation to accompany our appointment of a new Welch Chair, Paul Barbara.

The Welch Foundation, 1954-1998

By direction of the will of Robert Alonzo Welch, the Robert A. Welch Foundation was established in 1954 to support research in chemistry within the State of Texas. As he so aptly stated in his will:

"My desire, now, is to make that disposition of it [his estate] by will which will result in its being used in the way most beneficial to Mankind. I have long been impressed with the great possibilities for the betterment of Mankind that lay in the field of research in the domain of Chemistry. This is a feeling that I think is widely held by others. It is a popular expression to say that we are living in a 'Chemical World'. Day by day we see marvels wrought in that field."

The course of the Foundation was shaped by a Board of Trustees, all of whom had some direct connection with Mr. Welch, with the advice of a Scientific Advisory Board. The bulk of the annual revenue from investments was initially devoted to support of individual faculty members' research in chemistry. That practice has been followed consistently ever since, even though the Board of Directors now has the option, with some restrictions, of expanding the focus of support. They have steadfastly funded chemistry while recognizing that the field itself has broadened considerably. The Foundation's impact on research in the State of Texas is amply reflected in the over 24,000 scientific publications that have acknowledged financial support from the Foundation through the years.

Very early in the life of the Foundation, it was decided to host an annual conference, which was chaired by a member of the Advisory Board. The first conference, on "The Structure of the Nucleus," was held in 1957 and was chaired by P. J. W. Debye. These meetings have attracted participants from throughout the world and continue to draw attention to the chemical sciences in Texas. Moreover, they serve as the venue for presentation of the Welch Award, an honor of international renown that was established in 1972 and carries prestige that grows each year. The Award is composed of a plaque, a gold medal, and $300,000.

The "Lectureships in Chemistry" program was also started in 1957. Its purpose was to bring outstanding chemists to both four-year and graduate-level institutions throughout Texas. Each lecturer typically visits three different places to present a lecture that exposes students and faculty alike to state-of-the-art research in all areas of chemistry. To date, some 300 scientists have given about 1000 lectures as part of this program.

Additional activities in chemistry have come into the Foundation's purview over time.

continued on page 12

In This Issue

From the Chairman

Faculty recruitment, construction projects, CCD -based diffractometer

Marvin Hackert

Season Greetings to all our friends and alumni of the Department of Chemistry and Biochemistry at UT-Austin.

The Department continues to be a "happening" place. Faculty recruitment and retention continue to be major concerns and priorities of the department. I am sorry to report that Drs. Marye Anne Fox and Jim Whitesell (organic) left the University this past summer for positions at North Carolina State University, where Marye Anne has assumed the Chancellorship at NCS. We will miss them both but want to wish them well in their new positions. We also have had two more retirements, Drs. Jim Boggs and Petr Munk. We did recruit three new faculty last year, but between departures and retirements, are still falling behind. Dr. Paul Barbara (experimental physical chemist) joined our faculty as the Richard J. V. Johnson Welch Regents Chair of Chemistry (see p. 11). Paul comes to us from the University of Minnesota where he was the 3M-Alumni Distinguished Professor of Chemistry. Paul's laser lab will be housed in renovated CFKR space. Look for more on that in our spring newsletter. Dr. Ken Johnson (biochemist) was recruited to UT from Penn State where he was the Paul Berg Professor of Biochemistry. Ken is an enzymologist (see p. 12) and will hold the Roger Williams Professorship in Biochemistry. Ken has lab space in the new Molecular Biology Building where he is associated with the Institute for Cellular and Molecular Biology. Also, we were successful in recruiting Dr. Angela Belcher (inorganic/materials) from UC Santa Barbara who will be joining us in January as a new Assistant Professor.

Many of you ask me about the status of the Welch Hall Safety Enhancement Projects. Although the past two years have been hard on everyone in the department, I am pleased to report that those projects are on schedule and within budget. The sprinkler project is essentially done at this time and the remaining fire department related projects, including the new alarm system, smoke compartments, and the remodeled research storeroom should be finished by the time you receive this issue of *Chemical Compositions*. The Welch West Wing renovation project is also well underway, with substantial completion expected by next summer. In fact, the only construction project remaining by next fall should be the exhaust manifold project to connect the hood system of the 1929 addition into the newer air handling systems of the other additions. I invite you to stop by, visit and see the changes when you have the opportunity.

While recruiting and construction projects remain the headline items, I am happy to report continuing progress on maintaining our infrastructure. In the past I have told you about our improved computer network, new computer labs, improved NMR and mass spec capabilities. I am pleased to announce that this past summer we received word that we have been awarded a shared instrumentation grant from NSF with matching funds provided by the College to acquire a new CCD based X-ray diffractometer for the department. This new instrument will replace our 12-year old unit, providing much faster data collection times and enabling us to collect data on many systems that were intractable with the older instrument.

On a sad note, we mourn the loss of Bill Wade and Phil Bailey, both of whom died this past year.

Finally, I want thank all of you who have contributed to our department with your resources of time and money. This fall's newsletter includes a complete list of friends who have donated to the department during the past academic year. It is a pleasure to recognize and acknowledge the vital role that such individuals play in helping us maintain our quality programs at UT-Austin. There are so many ways that these gifts enrich our programs. Whether it be in the form of scholarship assistance, adding to our endowed lecture or faculty positions, gifts to the library fund, our patio project, etc., I hope that you will consider us when you plan your charitable contributions. The financial support of our alumni is a critical factor in helping us to meet our mission of excellence in both teaching and research.

We wish you all a very merry Holiday Season!! We do appreciate hearing from you and want *Chemical Compositions* to be your resource for keeping up with what is happening in your department.

- Marv Hackert

Bonnie Dunbar, NASA astronaut and Director of University Relations at the LBJ Space Center in Houston, and graduate student Sandra Whaley, with a poster Dunbar presented to the department. Dunbar's seminar on space research was co-sponsered by Women in Chemistry and the Texas Materials Institute.

News from the Mallet Library

Library meets the challenges of the modern student

Rapid change has become a way of life in the library world. Alumni who earned their degrees as recently as ten years ago might be amazed to learn that printed indexes and card catalogs are almost a foreign concept to current students. Students entering the University — at both the undergraduate and graduate levels — are more familiar with computers and the Internet than ever before and expect ready access to digital tools. As a result, card catalogs are long gone, and many traditional printed indexes are following them into oblivion. Databases are now the name of the game, and despite budget pressures the General Libraries are making strides in providing user-friendly, one-stop shopping for electronic resources via the UT Library Online gateway (http://www.lib.utexas.edu/). Although chemistry has always been a relatively conservative discipline when it comes to its literature, the vast bulk of which remains in the form of printed scholarly journals, the tools that provide access to the literature are evolving rapidly. The General Libraries now offer the following new database systems for UT chemists:

Chemical Abstracts - Student Edition - This is a remotely accessible database, available free to affiliated users via the web or telnet, that offers a selected subset of the massive Chemical Abstracts file. About 240 major English-language journals are represented, with coverage extending back to 1967. Subject coverage includes biochemistry, organic and physical chemistry, and materials science. Since the General Libraries subscribe to over 97% of the titles covered, CA-SE is an ideal tool for our undergraduates, who have not previously had access to an easy-to-use indexing source for core chemical information.

Beilstein Crossfire - The University joined the academic Beilstein-Minerva consortium in 1997, using temporary funds gathered from research overhead, technology fees, library electronic funds, and individual faculty grants. Crossfire provides UT researchers and students with desktop access to Beilstein's database of over 7 million organic substances, with associated data and structures, and over 6 million reactions. It is a valuable tool for organic synthetic chemists and drug designers.

Materials Safety Data Sheets - A new web-based interface, designed by the General Libraries, provides chemical safety information on over 60,000 substances. The data are leased from MDL Information Systems for the UT-Austin campus by the Office of Environmental Health and Safety. This database is heavily used every semester by undergraduate lab students.

As always, funding for these digital resources, as well as for traditional books and journals, is proving inadequate. Chemistry journals tend to double in price every six years, while library budgets have remained basically static. Campus site licenses for science databases are extremely costly. Without substantially increased support for UT's libraries, it will become increasingly difficult to maintain the level of excellence that students and researchers have come to expect from the Chemistry Library. On the positive side, the Regents provided $1 million in one-time funding to enhance the collections at UT-Austin in 1998, on behalf of all the campuses in the UT System. This money allowed the libraries to purchase books, reference sets, microform sets, and journal backfiles that had not been obtained during the last several years due to lack of sufficient funds. The Chemistry Library received over one hundred monographs and two large reference sets through this program, which will benefit chemists throughout the state.

David Flaxbart

While it does not address the costs of our serials, the Skinner Library Endowment continues to provide a mechanism for purchasing expensive reference materials. It's a way that alumni, corporations, and other benefactors can give something back to UT, so that the Chemistry Library can remain at the forefront of chemical information provision in all its forms. We hope that you will consider contributing to this endowment as part of your charitable giving.

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To get the latest news from the library, visit the Mallet web page at: http://www.lib.utexas.edu/Libs/Chem/.

—David Flaxbart, Chemistry Librarian

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Marvin Hackert receives Shell Oil Company Foundation's gift from H. C. (Cres) Fleming

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Chemistry and Biochemistry Staff Excellence Awards

Monika E. Hill
Chang Ming Huang

Chemistry and Biochemistry 1998 Service Awards

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35 Years
Carolyn White (retired)
30 Years
Kevin Connolly
20 Years
Dotty Frasch
20 Years
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20 Years
Jimmie Wallin
20 Years
Sharee Aery
15 Years
Joyce Thoresen
15 Years
Rose McCord
10 Years
Vinitha Weerasoovriya
10 Years

Librarian Excellence Award

David Flaxbart, Mallet Chemistry Librarian

Chang Ming Huang and Monika Hill were presented with Chemistry and Biochemistry Staff Excellence Awards by Marvin Hackert.

Reminiscences

Aubrey R. McKinney
BA (Chemistry) 1938
MA, 1940
PhD (Felsing) 1944

I cannot convey how much pleasure the Chemical Compositions brings me. The Reminiscences piece in the 1997 spring issue was of particular interest because it mentioned some of my old professors who were still around some twenty or more years after my time (1936-41). My memories of Dr. Henze are somewhat different from those of Dr. Perry. In spite of all his Prussian haughtiness, Henze was an old softy at heart. Although he worked my ass off and, along with the war and other minor factors, delayed my Ph.D. until 1944, the additional work he demanded has been beneficial to my career, and he was most generous in praise and support of my endeavors. I remember Watt, Hatch, Henze, Lochte, Felsing, "old" Dr. Bailey [this would be J.R. Bailey, not Phil Bailey], Dr. Schoch, and Dr. Griswald with considerable affection.

Although my major was under Dr. Felsing in physical chemistry, my teaching was under Dr. Lochte in analytical chemistry, and later under Dr. Johnson. The university was much smaller then, and all of the professors took a personal interest in all of the graduate assistants, not just their own. We were invited into their homes, shared picnics, excursions into the hills, and other activities that most students, sans transportation, could not otherwise enjoy. The professors would give the lectures, and we assistants would conduct the laboratories, grade all the papers—resulting in many a hilarious late night session. Among our group were such notables as Billy Shive, much honored for his achievements; George Wash, who founded a chemical company; and Walter Quebedous, who as Environmental Director for Houston, flew model airplanes through emissions from industrial stacks to sample their contents.

Perhaps you will find the following account of one of my research endeavors of interest.

AN ADVENTURE IN SCIENCE

I worked on my doctorate in physical chemistry at The University of Texas in the late nineteen-thirties. My being at UT was somewhat by accident. This was in those "dear dead days almost beyond recall" when a graduate student could select the area of research into which he [or she] wished to probe. I had chosen catalysis. Because of this interest, I had initially applied for admission to the Graduate School of Johns Hopkins University, where the then-current "Mogul" of catalysis was teaching. Much to my chagrin, I was rejected because I was married! Apparently, the Mogul's graduate students were expected to spend twenty-four hours a day on research throughout their doctoral training; there was no time for any other nonsense, such as attention to one's spouse.

So I entered UT, committed to establishing the art of catalysis on a fundamental basis and trying to elevate the art to a science. Catalysis was simply too useful a tool to be left to the try-this-and-try-that of the current state of the art. There was considerable interest in the subject among my professors in the Departments of Chemistry and Physics and the College of Engineering, although none of them were working in the field themselves.

There are of course thousands of chemical reactions of importance to the various branches of chemistry, some of them of commercial value and many of value to the study of chemistry, but most of these are rather complex, involving a number of possible routes, a number of intermediate steps, and a number of reaction conditions. The problem was to select a reaction that would simplify

Aubrey R. McKinney

analysis, yet provide a basis for evaluating catalysts. The reaction selected was the decomposition of carbon monoxide to elemental carbon and oxygen, the variables being time, temperature, and catalyst.

The reactant and products could be readily analyzed and the reaction conditions could be easily controlled, so now all I had to do was prepare the catalysts in some uniform manner that the method of preparation would not so complicate interpretation of the results. The catalysts all needed be pure metals in very finely divided form. Now, what technique for preparing the catalysts would meet these criteria? Off to the literature I went.

Descriptions of industrially used catalysts such as iron, cobalt, copper, chromium, and various precious metals provided an abundant literature, but all involved different methods of preparation and various supports that would make true comparison difficult. Then I ran across a paper in the literature that seemed to solve my problem. In this research the author had prepared pyrophoric metals by vaporizing the metals in an electric arc and collecting them with the stream of nitrogen.

Beautiful! Now all I had to do was duplicate the author's equipment in such a manner that I could collect the metals and run my tests.

After I had broken enough glass to more than complete an apprenticeship as a glassblower, the faculty of the Chemistry Department thought it wise to have a professional fabricate the reaction vessel. The talented people in the machine shop then came up with a dandy cathode and anode such that I could replace the metal being vaporized at will. As for the equipment needed for analyzing the products, I managed to fabricate it myself with a minimum of breakage, having served my apprenticeship. Now all that remained was to devise the electrical circuit. This required a transformer for converting ordinary voltage to high voltage, with suitable capacitance and inductance to complete the circuit.

The rest of the circuit was readily available, but where to find a suitable transformer? I searched the salvage cubbyholes of Physics, Chemistry, and Engineering to no avail. Finally, old Dr. Bailey, whose communications with famous scientists of Germany, France, and England I was privileged to study, remembered an ancient Tesla coil he had once used - Eureka! After breaking still more glass while incorporating the coil into my apparatus, I was all set to go.

The equipment worked beautifully. Metal vaporized at the sputtering anode, collected in the reaction vessel as a black powder and was strongly pyrophoric, as was inadvertently observed when air was accidentally admitted into the reaction vessel, although fortunately this occurred on only one occasion.

My research was well on its successful way until fate intervened. Returning home one evening from a successful day of research, I was informed by my wife that our radio was out of whack. It was a small unit that provided fairly excellent reception for programs of local stations, and in the evening could even pull in stations from Chicago to the West Coast. I had spent many pleasant evenings and on into the wee small hours listening to it while studying. In response to my wife's assessment, I turned it on to a local station—probably the local station—and reception seemed normal.

"Seems OK to me," I said.

"Well, it wasn't this afternoon!" was the response.

For the next week my research focused on evaluating the catalyst I had prepared and tabulating the results, after which I began preparation of another catalyst, using a new anodic metal. This took until very late at night, so my wife was fast asleep by the time I got home. However at breakfast the next morning I again heard the complaint:

"I couldn't get a thing on the radio yesterday. Static was terrible. Jane (a friend) came over, and said her radio was out of whack too. Everybody is complaining."

I switched on the radio, and the program came over as clear as can be—at least as clear as it could be in those days. "Hmmmmn, seems to be OK now. If it happens again you had better call the station. Probably something wrong with their transmission."

The next week, happily immersed in evaluating my second catalyst and in my teaching duties, I heard no more comments from my wife about the radio, although there was some discussion in the classes about the lousy radio reception of late. The consensus in the Physics Department was that the problem was no doubt related to sun spots and disruption of the Heaviside Layer.

Preparation of the next catalyst presented some difficulties, so it was on-again-off-again most of the day. First the anode gave problems, then just as I was about to accumulate enough catalyst to begin testing, the glassware broke, admitting oxygen to the vessel containing the catalyst. It promptly burst into flame, forcing me to shut down for the night and start over the next day. I returned home only to hear further complaints about the radio. I switched it on and everything seemed normal.

"Did you call the radio station?"

"I sure did, and they have been flooded with complaints. The Federal Agency has been called to investigate."

"Well, I hope they find the trouble. I heard some talk today that the radio interference people are complaining about may be caused by sun spots."

The next day was spent in teaching and in readying the apparatus for another attempt at the next catalyst. Upon arriving home, I inquired,

"How was the radio today?"

"Fine, no problem."

"Good, perhaps they have repaired their equipment."

"There was a lot of discussion about the interference, even an article in the paper. They claim nothing is wrong with the equipment, and sunspots have been ruled out since there is no such interference in other parts of the country. The problem seems local and the investigators are closing in on the cause."

"Great, perhaps it is the Austin lights [one or two of the famous Austin towers carrying high-intensity lights still survive]."

"Could be."

Upon returning to the laboratory the next day, I went to work generating a catalyst. After a few hours, Dr. Felsing came in accompanied by two gentlemen.

"Aubrey," he said, "there is someone here you should meet. They are from the FCC and are investigating the recent problem with radio reception."

"Well, I sure hope you find the cause. I've heard lots of complaints."

"We have."

"Excellent."

"You are it."

"Me!!!"

"You. This equipment here is jamming reception for miles around. You will have to shut it down."

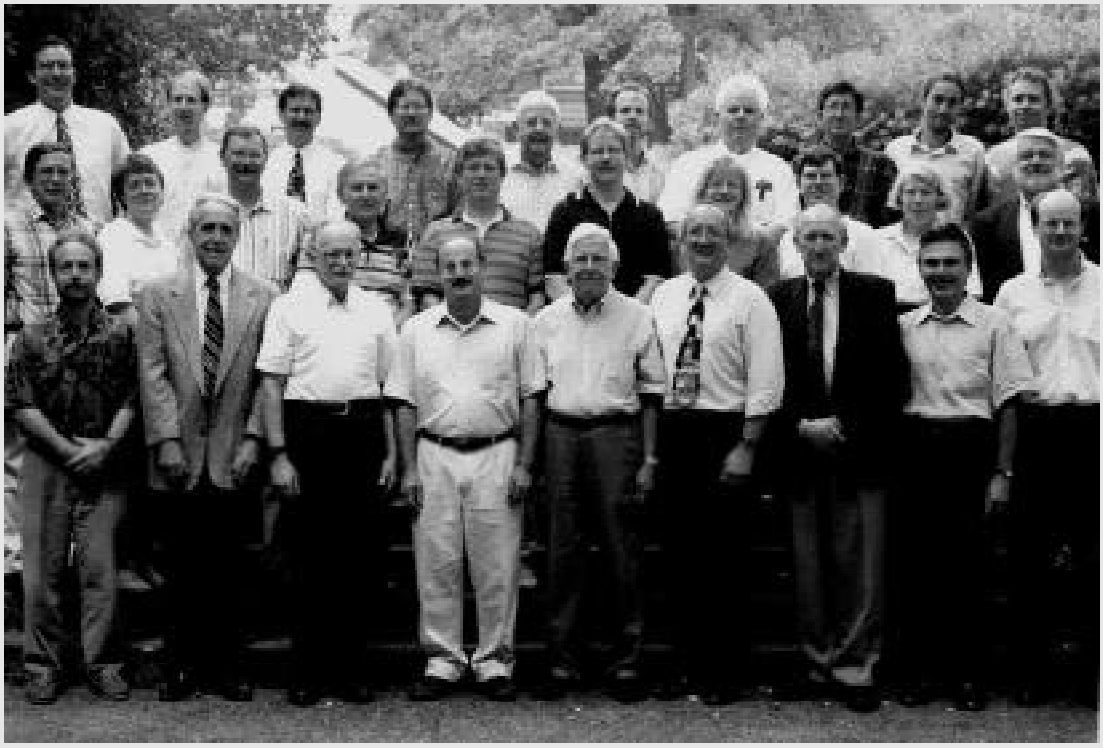
Dr. Felsing nodded in assent, and I reluctantly threw the switch.

"We are glad to bring this investigation to a close. You would be surprised to know how many people are upset."

"Not really. I've heard complaints for days. I am surprised to be the cause."

That evening my wife announced that the source of the static had been found and corrected. "It was coming from the University. It was probably someone doing experiments."

Chemistry and Biochemistry Faculty - May 1998



Chemistry and Biochemistry faculty: (l-r) ***Bottom row:*** *Peter Rossky, William Shive, Allan Bard, Alan Lambowitz, Lester Reed, Marvin Hackert, Joe Lagowski, Alan Campion, Richard Jones.* ***2nd row:*** *Mike White, Karen Browning, Jon Robertus, Daniel Ziegler, Jack Gilbert, John McDevitt, Jenny Brodbelt, Andy Ellington, Giesla Kramer, Ray Davis.* ***3rd row:*** *Dave Laude, Jon Sessler, Brent Iverson, Dean Appling, Jim Boggs, Eric Anslyn, Boyd Hardesty, John Stanton, Jason Shear, David Hoffman.*

Chemistry and Biochemistry Department Staff - May 1998

Department staff members: (l-r) ***Bottom row****: Jimmie Wallin, Vinitha Weerasooriya, Dotty Frasch, James Gardner, Carolyn White, Marv Hackert, Chang Ming Huang, Kevin Connolly.* ***2nd row:*** *Sylvia Adame, Kelly Wilkins, Mark North, Joyce Thoresen, Donna Reber, Kat Taylor, Barbara Jann, Jim Lemburg, Margaret Rodgers.* ***3rd row:*** *Rose McCord, Roger Williams, Opal Hodge, Susan Fullilove, Howard Johnson, Kenneth George, Steve Moore, Larry Poulsen.* ***4th row:*** *John Leamons, Steve Sorey, Barbara McKnight, Susie Pruett, Janet Macdonald, Steve Hilsberg, Robin Rogers, Don Carroll, Danny Vizant.* ***5th row:*** *Grady Rollins, Sharee Aery, Sheri Monaghan, Sandra Godfrey, Rebecca Perez, Monika Hill, Cheri Williamson, Rita Wilkinson, Barbara Bachman.*

In Memoriam: Prof. William H. (Bill) Wade

Prof. William Hampton (Bill) Wade died peacefully in his sleep during the night of June 27, 1998. He had a history of heart problems, having undergone a successful by-pass operation approximately five years ago. Nonetheless, he had been in fine health recently, so his death was unexpected, casting a deep pall throughout the Department of Chemistry and Biochemistry and among his many collaborators around campus and in a variety of industrial labs where he had a close scientific and personal interaction (with Bill these two aspects were never separated).

There are some faculty who set the tone for any Department, and by virtue of his dedication to the steady improvement of our intellectual and educational enterprise, Bill was such a person. Bill served the Department in many ways, including a stint as Chairman from 1974 to 1981, during which time the Department propelled itself into the first rank nationally and internationally. Some of our most visible and productive faculty were hired during his Chairmanship and he saw to it that they got off to a rapid start, making cajoling telephone calls as required, pulling strings and calling in favors to put lab renovations or equipment orders on the fast track, and establishing an important aspect of the academic culture in the Department of Chemistry and Biochemistry that persists to this day. We continue to do everything we can to help young faculty succeed. This policy has paid huge dividends over the years. Bill's service did not cease after his Chairmanship ended. For all succeeding Chairmen he was a sounding board for various strategies, problems to be solved, and sometimes just to talk. He had been Chairman of the University Building Committee, so the Department often turned to him for advice in the utilization of space, always a contentious issue. He was instrumental in establishing the 1978 addition, remodeling the 1929 building and was deeply involved in the renovation of the West Wing at the time of his death.

Bill's Ph.D. work was carried out at UT from 1951-55 under the direction of Norman Hackerman, past president of UT-Austin and Rice University and currently Scientific Director of the R. A. Welch Foundation (Houston), a major supporter of the chemical sciences. Bill's Ph.D. work involved the chemistry of corrosion. He was a Research Scientist at the University of California, Berkeley Radiation Laboratory, from 1955 to 1958, working with Glenn Seaborg in the area of low energy nuclear physics. He then became a Postdoctoral Fellow at The University of Texas at Austin from 1958 to 1961. In 1961, Professor Wade was appointed to the faculty of the Department of Chemistry at The University of Texas as Assistant Professor, followed by promotions to Associate Professor in 1966, and then to Professor of Chemistry in 1972. His research interests shifted into classical surface chemistry during this time, evolving into the

Prof. Bill Wade

design of efficient surfactant systems, initially with the aim of enhanced oil recovery and more recently directed toward environmental remediation. In collaboration with Prof. Gary Pope (Petroleum Engineering) he demonstrated a system for very effective removal of trichloroethylene from a chemical dump site in Utah, the results of which have attracted considerable interest among agencies faced with soil contamination. For this work and his collaboration with French scientists, he was named Chevalier de I'Ordre des Palmes Academiques by the French government in 1979. Bill has been a consultant to a number of companies including Petroferm USA (fuel emulsions), STATOIL (enhanced oil recovery), Affinity Biotech (microemulsions for drug delivery), International Specialty Products (gas), E.I. du Pont (various surface chemistry problems), AKZO Nobel (surfactant synthesis) and CONDEA Vista (surfactant properties).

Additionally, he has been active in the Division of Colloid and Surface Science of the American Chemical Society, having served one term as chairman and twice organized the National Colloid Symposium. He has been a prolific researcher, with more than 180 refereed articles co-authored with his graduate students, postdocs and industrial collaborators. In fact he was one of the early models in the Department for collaborative industrial-academic research.

Because of his need to characterize interfacial surface tension of liquid-liquid interfaces, Bill, Prof. Bob Schechter (Chemical and Petroleum Engineering, now retired) and then-graduate student Dr. John Cayias perfected the spinning-drop instrument. Many copies of their original device have been built in the Department under the supervision of Mr. James Gardner, and these are used throughout the world by researchers working in this field. The wide use of this instrument helped establish Wade's group as the one to consult and/or invite to national and international meetings on the subject of interfacial surface tension.

Bill had a plethora of interests outside of surface chemistry, interests that changed with time but were always undertaken with an intensity and skill that left his friends in awe. Among his passions at various periods of his life were motorcycle racing, sports cars, sailing, woodworking, and designing and building magnificent residences. But probably his longest lasting "outside" interest was oenology. Bill knew and liked his wine, a taste first cultivated during his stay in Berkeley and perfected in recent years. He and Christine (Kris) have probably visited more California wineries than any other Austinite, bar none! His advice on the subject of wines and excellent restaurants will be sorely missed by a portion of Department and his many other acquaintances.

Bill officially retired from teaching in Spring 1997 and a large and very successful dinner in his honor was given in November 1997. It particularly saddens those of us who knew him well that he was not able to enjoy many years of "retirement", given his continuing involvement in research, departmental activities (an example of his selflessness) and a very active travel schedule. Indeed, national and international meetings turned Wade into an inveterate traveler, and he and his wife of 16 years, Kris, often traveled to Europe or

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From the graduate advisor

Recruitment of graduate students continues to be extremely competitive

Prof. Jennifer Brodbelt

As we kicked off the fall semester, 41 new graduate students joined our graduate programs in Chemistry and Biochemistry. Of this group, 27 are men, 14 are women, and 12 are classified as international students.

Recruitment of graduate students has continued to be extremely competitive across the nation, and there appears to be a nationwide surge in stipends in order to attract the best graduate students. Several steps have been taken that affect our department. To make our financial packages more comparable to our peer institutions, the twelve-month stipend for new students who serve as teaching assistants has been raised to $17,280 (or $1440 per month). In addition, $400 per semester toward tuition and fees is being contributed by the College of Natural Sciences; a like amount is being provided by the University. The combined total is a welcome bonus to our students because tuition and fees have risen to about $1400 per semester. The new graduate students also continue to enjoy the full insurance benefits available to faculty and staff, and this insurance package really sets UT apart from many other highly esteemed graduate programs around the country.

In the 1997–1998 academic year, 47 students earned their doctoral degrees and 18 students earned their M.A. degrees from our graduate programs. An apparent trend is that a fair number of students are electing to terminate their graduate programs with M.A. degrees, a trend that stems in part from the increasing number of positions advertised for M.A. level candidates.

Departmental M.A. and Ph.D. graduates

Ph.D., Fall 1997

Erwin J. Alvarez (Brodbelt)
Jeffrey Todd Aplin (Bauld)
Benjamin J. Bolanos (Laude)
Mary Susan Burnett (Kitto)
Zhihua Du (Hoffman)
Michael P. Dwyer (Martin)
Andreas Gebauer (Sessler)
John W. Genge (Sessler)
Timothy E. Histen (Holcombe)
Christopher T. Jones (McDevitt)
Kurt H. Junker (White)
Uzodinma Okoroanyanwu (Willson)
Frank G. Salinas (Kodadek)
Troy B. Scoggins, Jr. (White)
Grant M. Underwood (Campion)
Manuel C. Ventura (Laude)
Ruizheng Wang (Sessler)
Han-chao Wei (Lagow)

M.A., Fall 1997

Christina Carey (Rossky)
Rochika Gopal (Hackert)
Michael F. Hay (Fox)
Narayani S. Kadagathur (Stanton)
Jun Liu (Heller)
Sean B. Mahoney (White)
Lu Shen (Robertus)
Nicolai A. Tvermoes (Sessler)

Ph.D., Spring 1998

Jeffrey L. Armstrong (White)
Andrew P. Breksa III (Appling)
Cameron W. Clark (Martin)
David E. Cliffel (Bard)
Jared J. Drader (Laude)
David A. Fancy, Jr. (Kodadek/Anslyn)
Kai Hu (Bard)
Chang-Ming Huang (Wyatt)
James E. Knapp (Hackert)
Jae-Kyun Lee (Ho/Campion)
Derrell Sloan (White)
Alexander B. Taylor (Hackert)
Christopher K. Taylor (Heller)
Sanjay Vashee (Kodadek)

M.A., Spring 1998

Julian M. Davis (Sessler)
Tonya M. Felix (Brodbelt)
Robin Roark Frey (Martin)
Christoph Gaul (Martin)
Peter G. Laughlin (Kodadek/Hoffman)
Jascinda Bridget McDoniel (Shear)
Anne M. Murphy (Hoffman)
Edward M. Olano (Gardiner)
Dudley W. Smith (Martin)

Ph.D., Summer 1998

Lara A. Campbell (Kodadek/Gilbert)
Ping Cao (Moini/Brodbelt)
Jeffrey E. Fieberg (White)
Carla Jo Harper (Laude)
Duen-ren Hou (Gilbert)
Michael J. Leeson (Willson)
Maria Viviana Lomeli Tapuach (Cowley)
Brian G. McBurnett (Cowley)
David R. Medeiros (Willson)
Anneke M. Metz (Browning)
Jason E. Ritchie (McDevitt)
Jessica M. Robinson (Laude)
Steven M. Savoy (McDevitt)
Theresa A. Torres (Laude)

M.A., Summer 1998

Yang Geng (Appling)
Ning Wang (Kitto)

Welcoming new faculty

Prof. Paul Barbara ~ Physical Chemist

Prof. Paul Barbara

My research is focused on the experimental investigation of molecular dynamics in condensed phases, especially during chemical reactions. My coworkers and I strive to attain a deep, quantitative understanding of how molecules in condensed phases undergo intra- and inter- molecular motion, how they exchange energy and how they react. We investigate chemical systems that range in size and complexity from simple key prototypes, e.g., the hydrated electron, to highly complex systems such as organized, organic thin-films and biochemical examples involving RNAs and proteins.

My interest in chemical reaction dynamics began in graduate school at Brown University. I studied the reaction mechanism of the thermal decomposition of diacly peroxides by chemical induced dynamic nuclear polarization under the expert tutelage of Prof. R. G. Lawler who patiently trained me in the traditions of physical organic chemistry. It wasn't an easy task for him since I was easily distracted by a burning interest in electronics and computers. (In fact, I "moon lighted" as a NMR service engineer for Brucker while I was a graduate student at Brown).

Ultrafast Chemistry - As a postdoctoral fellow I chose to work in 1978 with Peter Rentzepis and Louis Brus at Bell Labs in the then new area of research, ultrafast spectroscopy. I chose this direction of research because it offered the fantastic dream of direct real time monitoring of molecular motion during a chemical reaction. It also gave me an opportunity to learn laser technology and continue my training in constructing advance experimental apparatus for physical investigations. During my postdoctoral fellowship, and in the following several years while I was an Assistant Professor at Minnesota, ultrafast technology was limited in most cases to the picosecond (10^{-12}sec.) time scale. This allowed for a broad range of novel experiments on ultrafast proton and electron transfer reactions. We were able to measure the time scale for solvent reorganization around polar species and to understand how molecular motions on this time scale played a role in governing the rate of electron transfer reactions, i.e., the dynamic solvent effect. While picosecond spectroscopy allowed for many novel observations, it lacked the time resolution to observe some of the most important and least understood types of molecular motion. The development of femtosecond (10^{-15}sec.) spectroscopy in the late 1980's allowed us to study even faster process, including molecular dynamics on the vibrational time-scale! One example from our femtosecond research is the photophysics and solvation dynamics of the hydrated electron, which is the only system for which a nonadiabatic theory has been used to calculate excited state decay rates within a molecular description. The good agreement with theory for this system has been strong verification of contemporary theoretical approaches (which incidentally were pioneered by Prof. Peter Rossky and co-workers here at UT). My group has applied femtosecond spectroscopy to a number of other reactions, including: (i) the photodissociation of triatomics and diatomics, in order to understand solvent effects on vibrational energy disposal; and (ii) electron transfer kinetics in a DNA environment, in order to understand the distance dependence of such reactions. Indeed, as a result of femtosecond spectroscopy and corresponding theoretical advances, the area of solution phase chemical dynamics is rapidly becoming one of the most active areas in experimental physical chemistry.

Organic Thin Film Materials - About five years ago my research group branched out beyond the liquid phase and began to study molecular structure and dynamics in organic thin films. Our main experimental technique for this research is near-field-scanning optical microscopy/ spectroscopy (NSOM). NSOM is a scanning probe optical microscopy that breaks the diffraction limit to the resolution of ordinary microscopy by illuminating the sample through a subwavelength aperture in an NSOM probe. We have demonstrated that NSOM is a powerful tool for determining the morphology of organic thin films, especially films with complex mesoscopic structures. These include films of molecular aggregates, self-assembled multilayer polymer arrays, and organic heterojunctions. Mesostructured materials are being actively investigated in many laboratories due to their potential applications as components of sensors and display devices, as well as their novelty as a material class. Our work has focused on how the mesostructure of a material modulates its spectroscopy, photophysics, and dynamics. We have been particularly concerned with the distance scale for electronic energy transfer in thin films. We feel confident that the NSOM technique, especially in combination with ultrafast spectroscopy, will ultimately lead to a deep fundamental understanding of the chemical dynamics of organic thin films.

Single Molecule Spectroscopy - In the last few years we have added one more experimental tool to our arsenal, namely the new technique single molecule spectroscopy (SMS), which involves the investigation of the spectroscopy of a sample one molecule at a time! SMS gives direct information about the molecular distribution of physical quantities rather than their ensembeled averaged values. For chemical systems with complex chemical kinetics and dynamics, SMS is a powerful tool for unraveling the underlying single molecule dynamics and kinetics that would be invisible in an ensemble measurement. In our group, single molecule spectroscopy is having a great impact on our understanding of chemical problems ranging from the electronic structure of conjugated polymer molecules to the kinetics of complex biological process, such as tRNA unwinding during initiation of HIV reverse transcription. The latter project, which is in collaboration with Prof. Musier-Forsyth at Minnesota, is one of several that we are pursuing that involve biochemical mechanisms that involve RNA/protein interactions.

Laboratory for Spectroscopic Imaging - I am very excited about my recent move to UT and grateful to everyone who helped to make it possible. The move has opened the door to several new collaborations that will keep us busy for many years! Our laboratories will be located in the space in the ENS building that was formerly occupied by the Center for Fast Kinetics Research. The new lab, which will be completed by Dec. 10th, will be known as the Laboratory for Spectroscopic Imaging. It will include my own laboratories as well as space that will be available for collaborative projects involving state-of-the-art instrumentation for the investigation of molecular dynamics in condensed phases.

Welcoming new faculty

Prof. Kenneth A. Johnson ~ Biochemist

Prof. Ken Johnson

Kenneth A. Johnson recently joined the Department of Chemistry and Biochemistry and the Institute for Cellular and Molecular Biology, after 19 years on the faculty of the Department of Biochemistry and Molecular Biology at Penn State University, as the Paul Berg Professor of Biochemistry. He is now the Roger J. Williams Centennial Professor of Biochemistry.

"I have always considered that my most important contribution is in setting high standards for rigorous, quantitative research in biochemistry. Therefore, I feel at home in joining this Department and the Institute", says Dr. Johnson.

Dr. Johnson is noted for his work on the transient-state kinetic analysis of enzyme reaction pathways and for his development of new instruments that allow the application of these methods to the small quantities of biologically important macromolecules. He received the Pfizer Award in Enzyme Chemistry for his pioneering work on the detection of enzyme intermediates, in studies on EPSP synthase, the target of the herbicide, glyphosate. Work in his lab at UT continues along several lines of research.

HIV Reverse Transcriptase and AIDS. Recent work by Dr. Johnson and his students on the mechanism of DNA polymerization catalyzed by HIV reverse transcriptase has set the stage for the development of new, less toxic nucleoside analogs for the treatment of AIDS. In addition, analysis of the mechanism of action of nonnucleoside inhibitors, molecules that bind at a site distinct from the nucleotide-binding site, has revealed the details of their novel mechanism of inhibition. They slow the rate of the chemical reaction by perturbing the position of active site residues. In current work he and his students are working to understand the changes in protein structure that occur upon mutation leading to resistance so that new analogs can be made that can overcome the resistance.

Mitochondrial DNA polymerase. Most of the toxicity in the treatment of AIDS with nucleoside analogs results from their incorporation into mitochondrial DNA by the organelle's resident polymerase. Having now cloned the mitochondrial DNA polymerase, Johnson's student from Penn State, Allison Johnson (not related), is continuing work to further characterize the reactions governing the specificity of the enzyme. It is hoped that after understanding the structural, kinetic and thermodynamic basis for nucleotide selectivity by the mitochondrial DNA polymerase, less toxic analogs can be obtained.

Molecular Motors. More that a decade ago, Dr. Johnson and his colleagues defined the mechanism of force production by dynein, a motor that was named after the unit of force and drives the wave propagation along cilia and flagella. Recently they have turned their attention to another motor, kinesin, that drives the movements of membranous organelles and neurotransmitters along tracts of microtubules in neurons. Recent kinetic studies by Dr. Johnson and his students has revealed a novel alternating site mechanism whereby kinesin walks along the microtubule, coupling ATP binding and hydrolysis to movement. A recent crystal structure of kinesin has opened the door to direct tests for the roles of structural elements of the protein dimer in the coordinated walking movements, a topic that will keep new members of the Johnson lab occupied for some time to come.

The other Dr. Johnson. Dr. Johnson is pleased to have his wife, Dr. JoAnn Hunter Johnson, joining his laboratory at UT, as a Research Associate. Trained in physiology and psychology and working as a very successful clinical psychologist for the past two decades, JoAnn brings a special perspective to the laboratory. Together the Drs. Johnson plan new lines of research into the biochemical basis for the mind-body connection in healing and disease. By combining Ken's high standard for rigorous biochemical analysis with JoAnn's unique insights, we expect great new discoveries.

Robert A. Welch Foundation

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Dr. Norman Hackerman

For instance, recognizing that the presence of eminent scientists on faculties can rapidly propel departments to international fame, Welch Chairs were established and a total of 33 such endowed positions are now in place at 21 public and private universities and medical schools in the state. For instance, in addition to Prof. Barbara, Michael J. S. Dewar and F. Albert Cotton, are two noted chemists who came to Texas under the auspices of a Welch Chair.

Another initiative of the Foundation arose from the fact that not all educational institutions in the state were equally competitive with respect to their faculty members' involvement in research. Consequently, in l984 the Board established a Research Program that provides support on the basis of a departmental proposal, largely from institutions in which the most advanced degree is the Master of Arts or Science. These grants have the dual purpose of re-energizing faculty interest in research and in introducing undergraduates to the realities of doing research. There are currently 33 institutions with such support.

The Foundation recognizes the importance of education in the trail to a career in research. In this context, it supports a scholarship program which is administered by the Texas Interscholastic League. This is a competitive program open to Texas public high school students for scholarships in chemistry and chemical engineering at a Texas college or university and is funded at a level of some $200,000 per year. In addition, the Foundation supports the Welch Summer School Program for high school students, generally between grades 11 and 12. These students, some of whom have a potential interest in the chemical sciences or engineering as a career, attend one of five universities for a six-week session. There they not only hear about new ideas and methods in chemistry, biochemistry and chemical

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Prof. Jim Boggs retires

Professor ends teaching career after 45 years of exemplary service

In May 1998, Jim Boggs retired from teaching after 45 years of outstanding service to the University. Born in East Cleveland, Ohio in 1921, Jim graduated from high school in 1939 and then went on to Oberlin College, where he majored in chemistry. Owing to an accelerated schedule during the war years, he graduated in December 1942 and began graduate studies at the University of Michigan. His Ph.D. studies were interrupted in 1944, however, when he undertook a project associated with the Manhattan Project at Linde Air Products near Buffalo, New York. This work involved research on methods for the quantitative conversion of UF6 that had been partially enriched in 235U by the gaseous diffusion separation procedure. On his return to Michigan in the Fall of 1946, he initiated research under the direction of Lawrence Brockway. He was the only student that Brockway ever had who did not work on some aspect of electron diffraction; his dissertation involved the construction of a thermal diffusion column for the separation of stable chlorine isotopes and their use in investigating the reactivities of the fluorinated methyl chlorides. During three years of his graduate work Jim was also employed as an Assistant Professor at Eastern Michigan University. He was married in 1948 to Ruth Ann Rogers, an Oklahoman. She trained as a professional librarian and had worked in libraries at a number of locations. She continued to work in the library at Michigan until their first daughter was born in 1952. A second daughter was added in 1953. Jim completed his dissertation in 1952, spent the next year as an Instructor at the University of Michigan, and then accepted a position as Assistant Professor of chemistry at U.T. In 1956, daughter number three was added to the set.

During his first years in Austin, Jim's research directions grew from his graduate studies and his work on the Manhattan Project. A new focus developed when he began cooperative work with the Electrical Engineering Research Laboratory here. Jim became interested in using their equipment to study the frequency variation of gas-phase dielectric constants. To learn more about the technique, he spent the fall semester of 1960 working with E. Bright Wilson, Jr. at Harvard. On his return to Austin, Jim constructed a microwave spectrometer (they were all homemade at that time) and embarked on a series of spectroscopic studies that occupied the central portion of his career.

Prof. Jim Boggs

During the 1960's, Jim spent several years as Assistant to the Dean of the Graduate School during the glory days when money flowed liberally from Washington into a number of universities. Jim's work in the Graduate School was to disburse funds for research leaves, equipment, student support and similar causes, a job which made him many friends among the faculty. Along with Harold Hanson, who at that time was Chair of the Physics Department, Jim was co-founder and later Director for many years of the Center for Structural Studies. In collaboration with Hanson, he also initiated the series of Austin Symposia on Molecular Structure that have been held under his supervision at two-year intervals since 1966. These symposia have attracted many foreign visitors to U.T., a number of whom have attended almost every symposium. The seventeenth, and most recent, symposium in March 1998 drew 120 participants, including two Nobel Laureates.

A new enthusiasm began in 1969 when John Silber, then Dean of the College of Arts and Sciences, asked him to spend the summer visiting some universities in Europe. This initiated a love for travel that has been insatiable ever since. He has traveled widely around Europe, Asia, and North America both on business and for pleasure. He has spent happy summers and repeated shorter periods doing research in Norway and Hungary, and he has made extensive research visits throughout Japan, China, Russia, and India.

During one of the many summer months spent in Budapest, Jim made the acquaintance of Péter Pulay, a young theoretician who impressed him greatly with his ideas of using analytically determined gradients of the electronic energy to help in optimizing molecular geometries and in evaluating vibrational force constants. Of course, this is currently the standard procedure, but it was a novel idea then. Jim had previously investigated the use of quantum chemical computation to obtain some of the information he was getting from spectroscopy, but the techniques available prior to that time were too unreliable and difficult when applied to any but the smallest molecules. Jim gradually shifted his research from experimental spectroscopy into the development and application of computational methods for the study of molecular electronic structure and properties. The latter part of Jim's scientific career has dealt entirely with quantum chemical theory and its application to problems concerning molecular structure and spectroscopy.

In addition to his dedication to research, Jim has always had a deep concern for teaching at the undergraduate level. For a number of years, he taught introductory chemistry, and the students in these classes greatly appreciated his "open-door" policy regarding office hours. A more recent interest associated with education has been the promotion of study-abroad experiences for our undergraduate science students. He also organized a program that currently has a number of science students from foreign universities studying at U.T.; many of these individuals are in our department.

Jim's career has also been marked by numerous service activities. For example, he spent the 1991-1993 academic year as Program Officer for Theoretical Chemistry at NSF in Washington and has been active in the International Committee of the American Chemical Society. Locally, Jim has served as Coordinator for Physical Chemistry Division for many years and continues to do so. In addition to advising the new graduate students, he has always been ready and willing to assist his colleagues in their teaching and research.

Although Jim has retired from teaching, his research program continues at full throttle. We wish him and Ruth Ann many pleasurable and productive retirement years.

ALUM RETORTS

1952
Seymour H. Pomerantz, Ph.D. (Bailey) ~ is a retired Professor Emeritus from the Department of Biochemistry at the University of Maryland School of Medicine. He and his wife, Martha, a UT-Austin graduate and hand-papermaking artist, live in Baltimore. They have four children and eleven grandchildren.

1955
Marcellus T. Coltharp, B.S. Chemistry 1955, Ph.D. (Hackerman) ~ reports he is retired from Kentucky State University but still conducting research. He taught in all areas except biochemistry, thanks to the course requirements that were in place during his first two years in graduate school here.

1971
Joel Oliver, Ph.D. (Davis) ~ works for P&G managing a diverse group of analytical and physical measurements scientists and a computational chemistry/molecular modeling group.

1974
John Dale Butler, B.S. Chemistry, M.S. Acoustic Engineering, Naval Postgraduate School ~ reported for duty as the Executive Assistant to the Assistant Secretary of the Navy (Research, Development, and Acquisition) at the Pentagon.
Thomas J. Devon, Ph.D. (Pettit) ~ has been promoted to Research Fellow at Texas Eastman where he has been involved with oxo catalyst development and carbonylation technology research and development since he completed his Ph.D. in 1974. He is the primary inventor of the low-pressure oxo technology practiced by Eastman today and is an author on 27 US patents and numerous foreign patents.

1979
J. W. Rogers, Jr., B.S. Chemistry 1974, Ph.D. (White) ~ is a Professor of Chemical Engineering and an Adjunct Professor of Materials Science and Engineering at the University of Washington. He joined the faculty in 1991. His current research interests include the low-temperature synthesis of Group III-nitride thin films, the synthesis of model mineral surfaces, and nanoepitaxy of small biological molecules. He is also active in several innovative educational programs on campus, including serving as co-Principal Investigator for the NSF's Engineering Coalition of Schools for Excellence in Education and Leadership (ECSEL). Earlier this year he was elected a Fellow of the American Vacuum Society.

1980
Upali Weerasooriya, Ph.D. (Gilbert) ~ was named winner of the 1997 American Oil Chemists' Society Soap & Detergent Association Award. He is employed by CONDEA Vista, Austin.

1986
Robert M. Newman, M.A. (Morgan) ~ moved to California to work for Boeing Reusable Space Systems. He works mainly for the Space Shuttle's Orbiter Program in the Materials and Processes Department focusing on environmental issues, contamination control, and cleaning processes.

1989
Edwin Garcia, M.A. 1985, Ph.D. (Bard) ~ joined Dell Computer Corporation in July, 1998 as a Senior Diversity Manager. He states that even though his current interests have taken him out of the fields of chemistry and electrochemistry, he is keeping a firm grip in science and technology.

1990
Wei Ou, B.S. Chemistry, Ph.D. Analytical Chemistry (1996) University of North Carolina at Chapel Hill ~ advises he is employed as a SIMS Analyst with Evan's East in Plainsboro, NJ.

1991
Lisa L. (Saunders) Boffa, B.S. Chemistry, Ph.D., University of California at Berkeley (1996) ~ presented a revealing workshop in September entitled, "Everything You Always Wanted to Know about Industry but Were Afraid to Ask," sponsored by the UT Department of Chemistry and Biochemistry Career Services Office. The lecture was well-received, and we hope to have Lisa back next year. She is

ALUM RETORTS

employed as a Principal Investigator in the Chemical Sciences Laboratory of Exxon Corporate Research in Annandale, NJ.
Deborah Ann (Buchanan) Hess, Ph.D. (White) ~ works as a Staff Analyst for Evans Texas, Austin.
Salaiha Mondal, B.S. Chemistry, M.D. Baylor College of Medicine (1995) ~ completed residency at Northwestern Memorial Hospital and is in private practice with Northwestern Internists, Ltd. in Chicago. She is a clinical instructor on the faculty at Northwestern University Medical School and would love to hear from any UT Chemistry/Biochemistry alums in the Chicago area.

1992
Rory Stephen Goodman, B.S. Chemistry, Ph.D. Physical Chemistry, University of Colorado, Boulder (1998) ~ is a Senior Advisory Development Engineer at Seagate Technologies in Boulder, CO.
Robert Selliah, B.S. Chemistry, Ph.D. (Gilbert) ~ is now working for Boehringer-Ingelheim in Ridgefield, CT. He married in June, and his bride is earning her Ph.D. in in molecular biology from Marshall University.

1994
Ziqiang Guan, Ph.D. (Laude) ~ is employed at Merck & Co., Inc. after over two years of postdoctoral research with Prof. Fred McLafferty at Cornell University.
Christopher S. King, B.S. Chemistry, M.A. (Cowley) ~ works for Metrics Technology in Albuquerque, NM, where he is a Manager in the Applications Services Group.
Pei Wang Thomas, M.A. Chemistry (1991), Ph.D. (Kitto) ~ reports she has been working for the Medical College of Ohio as a Research Assistant Professor since June 1995.

1996
Peter Boul, B.S. Chemistry ~ is a graduate student at Rice University.
Armando Colorado, M.A. 1994, Ph.D. (Brodbelt) ~ reports that following a postdoc at Purdue, he was hired as a Senior Applications Scientist by Millipore Corporation.
Mike C. Hoehner, Ph.D. (Sessler) ~ recently became a Research Chemist for Dixie Chemical Company in Pasadena, TX.
Smuruthi Kamepalli, Ph.D. (Cowley) ~ has a job with Advanced Technology Materials Institute in Danbury, CT.

1997
Frank Gonzales Salinas, Ph.D. (Kodadek) ~ is an NIH Postdoctoral Fellow working with Stephen J. Benkovic at Penn State.
Uzodinma Okoroanyanwu, B.S. Chemistry 1991; B.S. Chemical Engineering 1991; M.A. (Gardiner) 1994; M.A. Chemical Engineering 1995; Ph.D. (Willson) 1997 ~ joined AMD after completing graduate studies at UT. His work involves developing advanced process technologies based on ArF (193 nm) and Extreme Ultraviolet (13.4 nm) lithographies. He worked in Japan under the auspices of a joint research project between AMD and Fujitsu Microelectronics.

1998
Brian D. Reed, B.A. Chemistry ~ is employed as an Analytical Chemist with International Paper Company in Flower Mound, Texas.

POSTDOCTORAL FELLOWS

Xiaohong Chen, (Anslyn) ~ is Director of Technology for ADCS-Korea. He reports the joint venture he set up was profitable within the first year: 10 people sold over $3.6 million in chemicals. He appreciates receiving *Chemical Compositions* and reading about friends from his postdoc days at UT.

Arunachalam Kannan, (Gilbert) ~ announces he and his wife are the parents of a baby girl, Kiertana.

Kathiresan Krishnan, (Gilbert) ~ is in Bangalore, India, where he is associated with the Centre for Liquid Crystal Research.

Xiaohong Nancy Xu, (Bard) ~ writes she is an Assistant Professor of Chemistry and Biochemistry at Old Dominion University and an Adjunct Assistant Professor at Eastern Virginia Medical School. She invites visitors to her homepage at www.odu.edu/~xxiaohong.

IN MEMORIAM

Philip S. Bailey, died November 18, 1998.
Floyd Richard Cordell, B.S. 1980, M.A. 1987, Ph.D. 1991 (Boggs), age 39, died September 21, 1998 from a brain tumor that had been in remission for many years. He is survived by his wife, Sandi.
Robert Lee Love, Ph.D. 1984 (Kohl), died June 15, 1997 at the age of 45. He is survived by his wife, Claudia Meier Love.
Leonard E. Mohrmann, Jr., B.A. Chemistry 1963, graduate degrees, University of Florida and Texas A&M University, died suddenly October 29, 1998. At the time of his death he was Quality Assurance Officer for the Texas Department of Health. He is survived by his wife, Sue; sons Lee and Vaden; a daughter, Nelwyn; his mother, Helen; and many other relatives.
Joseph P. O'Malley, age 81, passed away Wednesday, May 27, 1998, in Austin. He was born June 10, 1916 in Olyphant, PA. He was a retired 28-year veteran of the Air Force and worked in the Department of Chemistry and Biochemistry for 14 years thereafter, before retiring in 1986. He is survived by his wife, Ruth, and two daughters, Pat O'Malley and husband Don Clark, and Carol O'Malley.
Betty Jo Pearson Scarborough, B.A. Chemistry 1950, died November 5, 1998, according to the Houston Chronicle. She is survived by husband, John, and daughter, Kathryn Mary Nelson.
William Hampton (Bill) Wade, Ph.D. 1955 (Hackerman), died during the night of June 27, 1998. (See article, page 9.)

In memoriam: Prof. Bill Wade

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either coast as casually as most of us might drive to Round Rock.
Bill is survived by his wife Christine, stepdaughters Rebecca Erb of Seattle, Natalie Albarado and Courtney Arlow, both of New York City, nephew William Prescott and niece Lillian Sanches. He was predeceased by his first wife of 30 years, Sis. He leaves a broad legacy of collaborators, students, colleagues and acquaintances made through his many other interests over the years. His many contributions, including setting the tone for a collaborative and congenial environment, will influence the Department of Chemistry and Biochemistry for many years to come.

- Steve Webber and Jack Gilbert

Robert A. Welch Foundation

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engineering, but they also participate in research with a faculty member. The purpose is to expose the student to the chills and thrills of doing original investigations in the laboratory. Some 60 students were involved in the program this past summer. The Foundation also funds a conference for high school chemistry teachers each summer.

The endowment of the Foundation, which stood at $25 million in 1954, has grown to about $550 million today. In the interim, nearly $300 million has been distributed for the Foundation's various programs. Needless to say, the observation expressed by Mr. Welch that "Day by day we see marvels wrought in that field" is being furthered by his vision in supporting chemistry.

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