the university of texas at austin

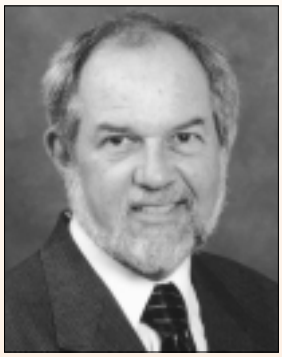
fall 2000

CHEMICAL Compositions

chemistry & biochemistry departmental newsletter

FROM THE CHAIRMAN

Let me extend the warmest greetings to alumni and friends of the department on this relatively cool and unusually cloudy day in Austin. For those of you no longer living in the Austin area, I want to assure you that the weather here has remained as varied as you probably remember. We have gone from a drought in the summer with Lake Travis more than 40 feet down to nearly three weeks of continuous rain and the lake levels within a few feet of overflowing. Similarly, the chairmanship of the department has changed hands from the experienced, steady hands of **Marvin Hackert** to that of a much younger fellow – at least by a few months. While I don't expect to "fill his shoes," with the obligatory lunches and banquet chicken dinners that accompany the chairmanship, I expect to rapidly exceed his waistline.



Prof. James A. Holcombe

After five years at the helm, Marv has returned to a more normal academic lifestyle of teaching and research; but he leaves some significant positive changes in his wake. During Marv's tenure as Chairman, he orchestrated the renovations of Welch Hall as a consequence of a fire in one of the labs in 1996 as well as a major renovation of the original 1951 west wing of the building, which was completed just this year. Like nomadic tribes, faculty and students were forced to move research and teaching labs to accommodate the construction crews boring their way through the building. As Marv will testify, the pressure on space that already existed within the building aggravated the relocation of the reluctant nomads. Normalcy has again returned to the building, and those who were displaced were generally greeted by newly renovated labs in their last move.

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The Beckman Scholar Program

"Whatever you do, be enthusiastic about it."

— Arnold O. Beckman.

In Spring of 1999, we were informed that the Department of Chemistry and Biochemistry, UT Austin was one of sixteen institutions nationwide selected out of over 100 applicants to receive funding for a Beckman Scholars Program Award. We were awarded a total of $88,000 to set up a Beckman Scholars undergraduate research program, and to support five Beckman Scholars over a 15 month period which ended in Summer 2000.

Thanking Dr. Beckman at the Beckman Scholars Symposium: (left to right) (standing) Sarah Martinez, Prof. Jason Shear, Prof. Brent Iverson, Dr. Ruth Shear, Cindy Ly, Prof. Dean Appling, Hau Ho; (front) Sara Faulkner, Dr. Arnold Beckman, Shanti Nulu

The purpose of the Beckman Scholars Program is to help stimulate, encourage, and support research activities by exceptionally talented undergraduate students; young people

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However, all this seemingly disruptive activity did not halt the forward movement of the department. During his five-year term we saw the addition of 15 new faculty members and the creation of three new Professorships and one additional Chair position. This Spring we will welcome the two latest additions to the faculty, **Dmitrii Makarov** and **Ed Marcotte**. Dmitrii is a theoretical chemist with his Ph.D. from Moscow Institute of Chemical Physics and a postdoc at University of Illinois. Dmitrii will also be a member of the Institute for Theoretical Chemistry. Ed is a biochemist with his Ph. D. from UT (**Robertus**) and a postdoc stint at UCLA. Ed will also enter as a member of the Institute for Cellular and Molecular Biology as well as the Center for Computational Biology and Bioinformatics.

We also lobbied and received significant computer enhancements to some of the Welch lecture halls so that many of the chemistry lectures can now employ presentation tools ranging from projected web pages to animated organic molecules undergoing an SN2 reaction. Over the semester break we expect the Convocation Center, where most of the seminars are held, to also receive audiovisual enhancements, *e.g.*, overhead projection will soon appear in the *middle* of the lecture arena!

This drive for improvements in the classrooms and lecture arenas is but one reflection of the faculty's concern for effective teaching. Another indication of this interest can be seen in a listing of the University's Academy of Distinguished Teachers, where the Department of Chemistry and Biochemistry, along with English, had the largest number of members. This is not to say that organic chemistry is now "fun," p-chem is no longer difficult or that my students giggle their way through complex equilibrium problems. However, I believe that it does suggest that we have a faculty that are doing an admirable job of balancing their time between undergraduate teaching and graduate student involvement in conducting state-of-the-art research.

Some special recognition must be extended to faculty since the last Spring issue of *Chemical Compositions.* **Paul Barbara** recently received the approval of the Board of Reagents to establish the Center of Nano- and Molecular Science and Technology. **Mike White** was recently honored with appointment to the Welch Chair in Materials Chemistry (p. 11), and **Steve Martin** was promoted to the M. June & J. Virgil Waggoner Chair (p. 11).

Al Bard recently added an Honorary Doctorate Degree from Texas A&M to his trophy wall. (Al refuses to discuss his conflict of allegiances during the recent UT-A&M football game. However, knowing Al for 25 years, I expect that he listened to the game on the radio while simultaneously editing a paper for *JACS*, writing a grant proposal and revising his graduate student's manuscript.) National recognition came indirectly to the department this fall when **Angela Belcher**, an Assistant Professor in the Department, became one of only 59 scientists across the United States to receive a Presidential Early Career Award for Scientists and Engineers. She received her recognition at a ceremony at the White House. Feeling that it was my job as Chairman to insure that Angela's ever-present warm and humble personality would not be affected by such a prestigious award, I was quick to remind her that I too had been to the White House (albeit as a member of Tour Group #3486).

With the accomplishments and vigor of the department noted, I must also mention the unexpected recent passing of **Bill Gardiner**, one of our internationally recognized and respected faculty members. Bill had a bicycling accident that resulted in a broken neck and ultimately his death on November 17, 2000. He leaves a legacy of major contributions in kinetics and combustion chemistry as well as numerous students who will recall both his gentle tutelage as well as his expectations of vigor in their studies. Bill's wry sense of humor, his anticipation of great accomplishments from his students and his understated enjoyment of life have added to the professional and personal development of the thousands of lives that he touched while a member of the Department for over 40 years. He will be sorely missed.

One final note: I reflected at the beginning of this article on my potentially "smaller feet" and the elevated activity level in the department. To accommodate these conflicting facts, I am pleased to announce the addition of Dr. **Rick Quy** (p. 3) to the newly created position of Associate Director. Rick's experience and personality will add efficiency and smoothness to the functioning of the department. While he doesn't know it yet, his job description will expand continuously until he squeals. We'll then back it up a notch and wait for a week before we add more "stuff". I think this is "management"… as I perceive it!

As the new Chairman, I enter a department that is teeming with energy and enthusiasm both from the young developing scientist-students, the faculty and staff. As I see it, I only need to maintain this departmental vigor and serve as a your conduit to the department and university in order to have a successful tenure in this position. What an easy job! Please feel free to contact me if I can provide any information or be of service to you.

— Jim Holcombe

Hackert—Roasted/Toasted

Jim Holcombe enjoys his turn at "roasting" his ("much older") former chair.

Faculty and staff enjoy a party to honor Marv Hackert for his five years service as department chair.

Marv and Bretna Hackert with hosts JoAnn and Ken Johnson.

Richard B. Quy—New Associate Director

Dr. Richard B. Quy

B.A., Chemistry, McMurry University, Abilene, Texas

M.A., Education, Pepperdine University, Los Angeles

Ph.D., Chemistry, Rice University, Houston

"To assist the Chairman of a large academic department to attain the goals of the department."

That's the formal, if somewhat nebulous, job description of a new position in the chemistry and biochemistry department that appeared on the UT employment web page last summer. The official title was Associate Director of the Department of Chemistry and Biochemistry, and after I was hired for the job, I found out that my first assignment was to help Chairman Jim Holcombe determine exactly what that means.

Several large complex departments such as ours at universities around the country have already made the move to hire someone like an "executive director" to provide continuity for the department and lend management support for faculty who take on the responsibility of chairing the department. Such individuals often have teaching and research experience that allows them to supervise administrative staff, deal with instructional staffing issues, interact with recruiters and industrial contacts, and play essential roles in budget and policy development. Generally speaking, that's the kind of experience I bring to the job.

I spent the past 20 years conducting and managing chemical research at the CONDEA Vista Company where I was the research director for the Environmental and Polymers research sections. My research interests there extended over a broad range of activities including cracking chemistry, poly-

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Faculty Awards and Honors

ALLEN BARD received an **Honorary Doctorate Degree** from Texas A&M.

ANGIE BELCHER was named as a recipient of the fifth annual **Presidential Early Career Awards for Scientists and Engineers**.

JACK GILBERT has been appointed as the **Associate Dean for Budget and Administration** in the College of Natural Sciences. He also continues to serve as interim chair of the Department of Human Ecology.

GISELA KRAMER received a **3M grant** for her school program at Barbara Jordan Elementary School to celebrate National Chemistry Week.

JOE LAGOWSKI is **Chair-Elect** of **Central Texas ACS**.

STEVE MARTIN is appointed to the **M. June and J. Virgil Waggoner Regents Chair in Chemistry** (p. 11).

JOHN TESMER was selected as one of five winners of the **American Heart Association, Texas Affiliate's 2000 Lyndon Baines Johnson Research Award.**

DAVID VANDEN BOUT has been named one of only sixteen **Cottrell Scholars** awarded this year by the **Research Corporation** to recognize young faculty excellence in both teaching and research. The award carries with it $50,000 to further David's teaching and research programs.

JOHN M. (MIKE) WHITE was awarded the **Arthur W. Adamson Award for Distinguished Service in the Advancement of Surface Chemistry** sponsored by Occidental Petroleum Corporation and was appointed to the **Welch Chair in Materials Chemistry** (p. 11).

Faculty Promotions

Eric Anslyn Promoted

BS, California State University - Northridge (1982)
PhD, California Institute of Technology (1987)
Outstanding Faculty Award, UT Continuing Education (1999)
Jean Holloway Award for Excellence in Teaching (1999)
Dreyfus Teacher-Scholar Award (1994-6)
Alfred P. Sloan Research Fellow (1994-6)

Prof. Eric Anslyn

The molecules of life - DNA, proteins, saccharides - all possess chemical functionality that leads to practical functions - information storage, chemical catalysis, and structural integrity. The ability to create designed chemical systems that also display functions is the goal of our research. We test ensembles of chemicals that have been designed to display either catalytic, sensing, and/or mechanical, functions. In this quest, we use whatever chemical entities seem the most appropriate to accomplish the tasks at hand: completely synthetic, combinatorial, nucleic acids, proteins, and polymers.

As one example of our research, we are examining synthetic receptors for the binding of common beverage analytes, such as sugars and carboxylic acid natural products. When combined with common indicators, these receptors create sensing systems. In collaboration with analytical chemists and an electrical engineer, we have studied a multi-analyte miniaturized "chip-based" device for the analysis of complex mixtures such as wine and beer. Our group is particularly excited to keep working with engineers since such collaborations assist in the transition of our chemical discoveries into truly functional technology.

Although teaching undergraduate classes is a responsibility that I highly enjoy, my most recent teaching efforts have been focused upon a specific graduate level course. I was given the opportunity to teach Physical Organic Chemistry for the past four years while I developed a textbook for this course in collaboration with the professor who first taught me this topic when I was a graduate student approximately 14 years ago. This is one of the most time consuming and challenging projects I have taken on, but also one of the most rewarding.

Jennifer S. Brodbelt Promoted

BS, University of Virginia (1984)
PhD, Purdue University (1988)
Postdoctorate, University of California - Santa Barbara (1989)


Prof. Jennifer Brodbelt

My research program involves the development of quadrupole ion trap mass spectrometry for a variety of interdisciplinary applications related to bioanalytical, organic, and inorganic areas. Research efforts are currently focused on the evaluation of aspects of molecular recognition and the development of electrospray ionization and matrix assisted laser desorption methodology for the detection and characterization of biologically active molecules, such as antibiotics, anti-tumor agents, and phytochemicals. The phenomenon of molecular recognition is important in many biological and chemical systems, such as those responsible for drug actions, enzyme catalysis, and ion transport. Advances in the field of molecular recognition have stimulated a growing need for new analytical methods for characterization of the structures of host-guest complexes and determination of binding selectivities. We use electrospray ionization to spray host-guest complexes into the gas phase, and the types of complexes and distribution of complexes are analyzed by mass spectrometry. This method has been used to study the binding properties of lariat ethers, calixarenes, molecular clefts, crown ethers, and a variety of other novel macrocycles.

In addition to directing an active research program, I have served as the Graduate Adviser for the past five years and have recently also undertaken the role of Head of Graduate Recruiting. The last few years have been a very competitive period for graduate recruiting, in part because of the booming economy that has made jobs for B.S. chemists and biochemists very attractive and also the lure of fast-paced careers in the high tech industry. We have beefed up and updated our recruiting activities, as described in articles in previous Newsletters, and the efforts are beginning to pay off. The class of incoming graduate students in the fall of 2000 was the largest in the past five years.

One of my favorite courses to teach is CH301, Principles of Chemistry, the course geared for freshmen. Sections are typically large (> 400 students), but the enthusiasm of the freshmen is truly inspirational. I also enjoy teaching the upper-division analytical courses and the graduate level analytical and mass spectrometry courses. Alternating between freshmen and graduate courses is a great way to stay connected to all types of students in a large university environment.

John McDevitt Promoted


Prof. John McDevitt

Professor John T. McDevitt was promoted to Full Professor effective in the Fall semester of 2000. John received his B.S. degree in Chemistry in 1982 from California Polytechnic State University, San Luis Obispo where he was recognized with a Chemistry Department Research Award. He completed his Ph.D. in Chemistry from Stanford University in 1987 where he was honored with a prestigious Grace Fellowship. After postdoctoral research at the University of North Carolina at Chapel Hill, he joined the faculty at UT-Austin as Assistant Professor of Chemistry in 1989 and was promoted to Associate Professor with tenure in September of 1995. In 1990 Dr. McDevitt received a Presidential Young Investigator Award and in 1991 was granted an Exxon Education Foundation Award.

A long-standing research interest of the McDevitt group has been in the area of hybrid molecular assemblies as applied to sensor and device applications. On this foundation and taking inspiration from nature, the McDevitt group developed the concept for and launched a research program directed towards a chip-based technology suitable for the rapid analysis of complex fluids using “electronic taste chips”. This highly collaborative project involves important contributions from the Anslyn, Bard, Ellington, Georgiou, Iverson, Neikirk, Shear and Willson laboratories. The McDevitt group’s efforts provided a bridge between the macroscopic world of electrical engineering and the microscopic worlds of chemistry / biochemistry. To date, the electronic taste chips have been shown to be suitable for detection / quantification of acids, bases, salts, sugars, proteins, viruses, and DNA oligomers. Likewise, the chemical and biochemical content of complex fluids such as blood and urine can be digitized in near-real-time. Work is now in progress to correlate these “digital fingerprints” with important health, environmental and food safety/quality factors. This work was selected as part of Science Coalition’s Best Scientific Advances for the Year. The science and engineering advances in this area have also spawned the creation of a new Austin-based company called Labnetics that will focus on the development of customized chip-based medical and veterinary assays. Three recent graduates from the UT Chemistry/Biochemistry program, Dr. Damon Borich (Chief Medical Officer), Dr. Steven Savoy (Chief Scientist), Dr. John Lavigne (Chief Scientist) now serve in leadership positions in this high profile commercialization effort. At UT-Austin, Professor McDevitt directs a group of 17 co-workers and has published over 100 papers in scientific journals and is the author or co-author of 19 patents. The McDevitt group’s research efforts are supported by the NIH, NSF, TCSUH, AFOSR, ARO, Beckman Foundation, Labnetics and the Welch Foundation.

Corporate and Foundation Donors to the Department of Chemistry and Biochemistry

September 1999 – August 2000

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Shell Oil Company Foundation

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Sustainers $250-499
Chaparral Foundation
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Donors To $249
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Harcourt Brace and Company
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September 1999 – August 2000

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Donor to James E. and Ruth Ann Boggs Endowment

Dr. Gregory L. Hemphill

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Annual Fund Donors designating gifts for the Department of Chemistry and Biochemistry

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Dr. Ricardo Fuentes
Dr. George R. Haynes
Drs. Lal C. and Deepika Kamra
Mr. Owen W. Lofthus
Mrs. Martha McKee
Dr. Jennifer L. Muzyka
Dr. Charles E. Sumner

New Faculty – Keith J. Stevenson

Prof. Keith S. Stevenson

B. A., University of Puget Sound

Ph. D., University of Utah

Postdoctoral Associate, Northwestern University

Analytical Chemistry, Electrochemistry and Surface Chemistry

I grew up in Walla Walla, Washington, an agriculture community famous for its sweet onions, green peas, asparagus, strawberries, wheat and blossoming viticulture. I spent my formative years working the summer harvests and working for my father who owned a sporting goods/men's clothing business. In 1989, I received my undergraduate degree in Chemistry from the University of Puget Sound. I then joined ATI Technologies, Inc as an analytical chemist, where I was involved in the testing of soil and water for hazardous environmental pollutants. The lab was also involved extensively in monitoring the clean up of the Exxon Valdez oil spill that occurred off the coast of Alaska in 1989. After a three-year stint in industry, I returned to graduate school and received a Ph.D in physical/analytical chemistry with an emphasis on electrochemistry from the University of Utah in 1997. My graduate work focused on studying electrochemical adsorption phenomena at solid/liquid interfaces. One aspect of my research involved the construction of a scanning tunneling microscope (STM) for electrochemical investigations. This work was conducted under the guidance of Professor Henry S. White, a former UT-Austin Ph.D. chemistry graduate with Professor Allen J. Bard. I then journeyed to Northwestern University to work with Professor Joseph T. Hupp. My postdoctoral research activities included the study of mesoporous materials and development of integrated scanning probe and optical imaging techniques. I also performed research in the area of chemical sensors.

Currently, I am teaching CH456 (analytical chemistry) and setting up my research laboratory. My research is aimed at understanding how to synthesize, assemble, control and characterize matter on the nanoscale. For instance, in my lab we are developing unconventional optical techniques to study electrochemical reactions in confined microenvironments. We are also working in the area of thin film deposition and corrosion; and in chemical sensor design and development. Research of this kind is important for developing superior chemical process technologies associated with the areas of chemical sensing, energy storage/ conversion, photonics, microelectronics, and device miniaturization.

In my free time, I plan on flyfishing the local rivers and the Texas Coast. I also enjoy hiking, soccer and woodworking. When I get the space, my first project is to build a boat!

Graduate Recruiting

The Department welcomed 65 new graduate students in the fall of 2000. This is a much larger class than in the previous three years, in large part due to our newly invigorated recruiting practices, higher stipends, and our dynamic new faculty who have made recruiting a top priority. Many thanks to our divisional recruiters including David Vanden Bout (physical chemistry), Brian Pagenkopf and Mike Krische (organic), David Hoffman (biochemistry), Angie Belcher (inorganic) and Jenny Brodbelt (analytical) and the fantastic efforts of Graduate Coordinator Barbara McKnight and assistant Anna Shin. Our expanded recruiting effort will continue this year with both faculty and graduate student trips to undergraduate institutions and further development of the departmental Web site, along with our always-successful visitation weekends in the spring.

—Jennifer Brodbelt

New Biochemistry Graduate Advisor

Prof. David W. Hoffman

Associate Professor David Hoffman is our new graduate advisor for the Biochemistry Ph.D. and Masters degree programs. Having been a graduate student himself not too long ago, Dr. Hoffman is eminently qualified to provide advice as to how to navigate successfully through the rigorous course work, seminar, research and examination requirements of the graduate programs. A healthy fraction of the department's graduate students are currently pursuing the Biochemistry PhD, and this fall ten new students entered the program. The biochemistry program will likely continue to increase in popularity, with the rapid improvements in our abilities to investigate and understand complex biological systems at the chemical and molecular level.

New Faculty – Ben Liu

Prof. Hung-wen (Ben) Liu

Professor Hung-wen (Ben) Liu was born in Taipei, Taiwan, Republic of China and graduated with a B.S. degree in Chemistry from Tunghai University (Taichung). After two years of military service, he began his graduate study at Columbia University where he carried out research under Professor Koji Nakanishi. His work on the additivity relation in exciton-split circular dichroism curves and its application in structural studies of oligosaccharides earned him a Ph.D. in 1981. He then joined Professor Christopher Walsh's group at MIT as a postdoctoral fellow and where he became involved in the field of mechanistic enzymology. In 1984, he became an Assistant Professor in the Department of Chemistry at the University of Minnesota. He was promoted through the ranks to be the Distinguished McKnight University Professor in 1999. Professor Liu recently joined the Department of Chemistry and Biochemistry and the Medicinal Chemistry Division of the College of Pharmacy. He holds the George H. Hitchings Regents Chair in Drug Design.

Professor Liu's research is focused on enzymes, the cellular catalysts that facilitate nearly all of the biological reactions. The major thrust of his work is to elucidate the molecular basis of a variety of enzymatic reactions that are physiologically important and mechanistically intriguing. The goal of his research is to establish a full understanding of the functions of these biological catalysts or processes and to rationally design methods to control or mimic their actions.

Enzyme Mechanisms and Inhibitor Design — Some of the enzyme-catalyzed reactions currently being studied in Liu's group are involved in such diverse phenomena as bacterial cell wall formation, biosynthesis of and resistance to antibiotics, lipid metabolism, and the post-translational modification of nuclear proteins. Using a multi-faceted approach, his group has cloned the genes for the target enzymes, purified the desired proteins, and synthesized a wide variety of chemical probes and inhibitors. Incubation of these rationally designed molecules with the target enzymes has led to the elucidation of the detailed mechanisms of many important enzymatic reactions. The insights gained from this work have broadened our perspective on enzymatic catalyses, and also paved the road for an ongoing effort in Liu's group to develop these enzymes as tools to prepare bioactive compounds. These studies are valuable to applied medical research because most of the enzymes being studied are potential targets of therapeutic drugs.

Metabolic Pathway Engineering — The emergence of pathogenic bacteria that are resistant to many commonly used antibiotics poses a serious threat to human health and has been the impetus of the present resurgent search for new or improved antimicrobial agents. In response to this urgent call, Professor Liu has initiated an effort to study the biosynthesis of diverse natural products, especially the macrolide antibiotics and a variety of glycoconjugates. His work over the last few years resulted in the elucidation of several intricate pathways that nature has evolved for the production of secondary metabolites. Most significantly, his group has demonstrated the feasibility of manipulating nature's biosynthetic machinery to generate new chemical entities. For example, by selective disruption and/or substitution of part of the sugar biosynthetic genes in the producing organism, Liu's group has finished the constructiion of a few glycosylated macrolides bearing modified sugars. These results represent one of the first few cases in which a combinatorial biosynthetic approach is used to create a library of new compounds. It is hoped that this effort will eventually lead to novel drugs with new or improved biological activity.

Protein Function Regulation — Recently, Professor Liu has also begun a study on ADP-ribosylation of proteins, a phenomenon that is associated with the post-translational modification of DNA-binding proteins in the nucleus. This modification is essential for the regulation of many critical cellular processes including DNA replication and repair, gene expression, and apoptosis. His current focuses on this subject are the investigation of the catalytic mechanism of poly(ADP-ribose) polymerase and the correlation of the biological function of modified protein versus the structure of appended polymer. How the polymerase recognizes nicked DNA will also be explored. A better understanding of this enzyme that catalyzes the formation and branching of the ADP-ribose polymer is clearly important. Professor Liu's effort in this area will certainly make a worthy contribution to a planned rational drug discovery initiative targeted towards many serious threats to human health.

Overall, Professor Liu's research lies at the crossroads of chemistry and biology. He and his coworkers are motivated by the challenge and excitement of applying chemical methods to devise solutions to important biological problems. All of his projects have high content of biomedical relevance, and the results are expected to provide foundations for the development of valuable pharmaceutical agents. His research has been recognized by many awards, including a Research Career Development Award from National Institutes of Health, the Horace S. Isbell Award from the American Chemical Society Carbohydrate Division, and a MERIT Award from the National Institute of General Medical Sciences. Professor Liu is an active member in a variety of professional societies, and has served on many review panels as well as editorial boards. He is also a cofounder of two biotech companies.

Trained in microbiology and immunology, Professor Liu's wife, Dr. Yung-nan Liu, has been working in biotech industry for many years. They have three children, with the eldest daughter pursuing a Chemistry degree at Cornell University. In his spare time, Professor Liu enjoys reading, traveling, photography, and playing with model train sets.

DEPARTMENTAL M.A. AND PH.D. GRADUATES

Ph.D., Fall 1999

Joel D. Adcock (Wyatt)
Monica Alcala Saavedra (Webber)
Suleyman Bahceci (Boggs/Bersuker)
John H. Clements (Webber)
Gregory S. Hair (Jones)
Maury E. Howard (Holcombe)
Joel S. Silverman (Cowley)
Stacy E. Sparks (Lagowski)
Cyndi A. Wells (McDevitt)

M.A., Fall 1999

Lynette K. Ballast (Campion)
Brenda J. Holtzman (Willson)
Wei Li (Hoffman)
Paul M. Thompson (Anslyn)

Ph.D., Spring 2000

Jeffrey J. Almrud (Hackert)
Sheryl M. Blair (Brodbelt)
Sungseo Cho (Willson)
Lelia Cosimbescu (Willson/Whitesell)
Anne K. Courtney (Martin)
Hyeran Ihm (White)
Liang-Hui Lee (Lagow)
Daren M. Lockwood (Rossky)
Kyle W. Patterson (Willson)
Maria Svinth (Robertus)
Maria R. Talingting (Webber)
Yue Teng (Webber)
Jing Wei (Shear)
Junfeng Zhou (Bard)

M.A., Spring 2000

Brendan H. Grubbs (Kitto)
Mustafa E. Koken (Holcombe)
Junyoung Kwon (Brodbelt/Moini)

Ph.D., Summer 2000

C. Richard Arkin (Laude)
Scott K. Bur (Martin)
Hsuan-Chen Chang (Lagow)
Mark S. Cubberley (Iverson)
Maha Z. Foote (Hurley)
Michael L. Gostkowski (Shear)
Esther C. Kempen (Brodbelt)
Delony L. Langer (Holcombe)
John J. Lavigne (Anslyn)
Yanhui Ma (Webber)
Rhonda K. Raymond (Appling)
Muhunthan Sathiosatham (Sessler)
Nicolai A. Tvermoes (Sessler)
Yue Wang (Hoffman)

M.A., Summer 2000

Keith T. Ballentine (Stanton)
Sylvia Garcia Diaz (Anslyn)
Miltiades Papamiltiades (Gardiner)

Dr. Larry Poulsen retires


Dr. Lawrence (Larry) Poulsen

Dr. Lawrence (Larry) Poulsen, an employee of the department for almost 30 years, retired this summer.

Larry was born in Idaho, however his family moved to California when he was 15, where he grew up and lived until he came to Texas. He received his BS in Chemistry from the University of California Riverside in 1965, and a Ph.D. in biochemistry in 1969. After a post doctoral stint at Texas A&M, he joined the Biochemical Institute where he worked for Dr. Dan Ziegler, initially as a PHS Post Doctoral Fellow and then as a Research Scientist. He is well known for his work in understanding the kinetics of the flavin-containing monooxygenase family of drug metabolizing enzymes. Larry was selected as a biographee for Who's Who in America based on his work on this enzyme, and his many years service to his church and the Boy Scouts of America. Larry also became well known around the department for his expertise in computer hardware and networking.

In 1996, as the department was undergoing a major upgrade of its internet and computer facilities, Larry was hired as our first Computing Services Manager for the Department. He oversaw the construction of our open-use computer labs, the improved WelchNet, the creation of the department's multimedia facility, and helped coordinate ITAC proposals of our faculty.

Although retired, Larry is working towards a molecular model of the flavin-containing monooxygenase family of enzymes. Larry is very active in his church and has plans for an 18-month service mission beginning next year, after which he will return to UT to continue his research on enzyme structure and kinetics. He also enjoys having more time to spend with his wife, genealogy projects, and his two sons, four daughters, and 19 grandchildren. Larry and his wife also enjoy traveling, and recently returned from a trip to Chihuahua, Mexico where they visited relatives and toured the Copper Canyon National Park.

The quality of our department is measured in large part by the quality of our people - faculty, staff and students. We thank Larry for his many years of excellent service to the department in a myriad of ways, and wish him much joy and satisfaction in his well deserved retirement years.

—Marv Hackert

Mallet Library News

UT System Licenses SciFinder Scholar


David Flaxbart

In Fall 2000 the University of Texas System signed a license with Chemical Abstracts Service (CAS) for wide access to their online searching system, SciFinder Scholar. Eight UT campuses will share access to SciFinder: Austin, Arlington, Dallas, El Paso, San Antonio, the Southwestern Medical Center in Dallas, the Health Science Center in San Antonio, and the Health Science Center/MD Anderson Cancer Center in Houston. SciFinder Scholar provides point-and-click access to several Chemical Abstracts Service databases, including the full Chemical Abstracts file (1967-present), Registry, CASREACT, CHEMLIST, and CHEMCATS. Users can search more than 19 million citations to the literature by topic, author, CAS Registry Number, patent number, and CAS abstract number. More than 24 million chemical substances may be searched by chemical name, CAS Registry Numbers, and formula. Users can also use a sophisticated structure drawing module to execute structure and substructure searches for substances and organic reactions. From a list of references, a searcher can move directly to the electronic full text of a growing number of journals, patents, and other materials, making SciFinder the central node in a seamless network of literature searching capabilities.

Early reaction to SciFinder Scholar has been enthusiastic, because it brings the full range of Chemical Abstracts data to every chemist's desktop. Chemical Abstracts Service is by far the largest and most comprehensive indexing organization in the sciences, scanning over 9,000 journals and indexing millions of chemical patents, conferences, dissertations, technical reports, and books in all areas of the chemical sciences. It also exhaustively registers and indexes newly reported chemical substances, including drugs, biomolecules, polymers, and multicomponent substances. Having all this information at one's fingertips, day and night, will revolutionize the way chemists, particularly graduate students, do their work at UT. For more information about SciFinder Scholar, visit CAS' web page at http://info.cas.org/SCIFINDER/SCHOLAR/.

Welch Chemical Information Grant

The Welch Foundation Chemical Information Project has now completed its first year, with results that are extremely positive for the Mallet Chemistry Library and for chemists throughout Texas. The Welch Foundation awarded a grant of $300,000 to the UT-Austin General Libraries in 1999, to enable the library to purchase important materials and to enhance the Mallet Library's role as a true center of chemical information in the state. Thanks to the grant, hundreds of volumes of unique chemistry reference tools have been purchased so far. Austin now holds the only complete collections in Texas of the Gmelin Handbook of Inorganic Chemistry and the Landolt-Bornstein Numerical Data and Functional Relationships series. Several other series have also been updated or completed and numerous monographs added. Through the TexShare program, a statewide resource sharing network created by the Texas Legislature and coordinated by the Texas State Library and Archives Commission, loans and copies of materials in Austin's libraries are available to students, faculty, teachers, and researchers across the state. The Welch grant project will continue through August 2002. Visit the Welch project web page at http://www.lib.utexas.edu/Libs/Chem/welch/ for more information.

Library Endowments

While the Welch grant represents a temporary increase in the library's spending power, the Skinner and Boggs Endowment funds remain vital and perpetual sources of library support. As always, donations to these funds are welcome. As state and university budgets fluctuate, these endowments help ensure that the Mallet Library will remain one of the largest and best chemistry libraries in the country. A strong library is an integral part of a chemical education, particularly at the graduate level, and we are committed to continued excellence.

— David Flaxbart

Quy, continued from page 3.

merization, polymer applications, surfactant processing and applications, and product biodegradability and aquatic toxicity.

For the last 10 years I worked at the Vista laboratories here in Austin; and when Vista chose to sell its polymers division to a company in Louisiana last winter, I opted to take early retirement and "pursue other interests," as they say. I've long been interested in making a second career in education, and I began teaching chemistry as an adjunct instructor at St. Edward's University in the spring before coming to UT in October.

I've already begun supervising the departmental staff and have been taking a crash course in facilities management with the generous help of Ed Burshnick. Gradually, I will be taking on other tasks that will involve industrial relations, outreach and development functions, budget planning, and preparing grant proposals for departmental instrumentation and support. And, of course, as the job description says, I will "manage issues and perform other tasks as required and assigned by the Chairman of the Department." Who knows what that might be?

At any rate, I have enjoyed my short initiation here at UT immensely. The faculty and staff have been wonderful, and I look forward to a long second career in this setting. My office is in the Chairman's suite, and I hope that many of you readers, in and away from Austin, will be able to stop by sometime and get acquainted.

Boggs Matching Gifts to Library Fund


Prof. James E. Boggs

Jim Boggs, Professor Emeritus, came to UT in 1953. Although he officially retired in 1998, Jim continues to work in the department full-time looking after his research group and engaged in student counseling. During his 45 years of teaching, Jim taught essentially every freshman and physical chemistry course we have offered. He pioneered the development of introductory courses for non-majors that were adapted to their special needs.

In recent years, Jim has been deeply involved in promoting international exchange opportunities for undergraduate science students. The College of Natural Sciences now has approximately 40 students who spend a semester, or a year, studying in foreign universities as exchange students, meaning that they continue to be registered at UT and are considered as resident UT students, just living (far) off-campus and taking their course work elsewhere. Jim works with most of these students before they leave, by email while they are away, and in translating their credits into UT equivalents upon their return.

Another favorite project of his is the chemistry library. A champion for excellence, Jim and his wife established the James E. and Ruth Ann Boggs Chemistry Library Endowment (http://www.lib.utexas.edu/About/endowments/Boggs.html) and will match donations made to the fund between now and November 1, 2001, up to a total of $25,000. If you work for a company that also matches your donations, this could leverage your donation four-fold - what a deal!!

White Appointed to Welch Chair in Materials Chemistry

Mike White joined the faculty at The University of Texas at Austin 1966, having received his Ph.D. from the University of Illinois the same year. He has served the University with great distinction over the years as professor, Department Chairman and Director NSF Science and Technology Center for Synthesis, Growth, and Analysis of Electronic Materials. Professor White's dedication to the educational mission of the University (which he believes is central) has been recognized by The Jean Holloway Award for Excellence in Teaching, the University's oldest, and most prestigious, campus-wide teaching award. Professor White helped pioneer the development of modern surface chemistry and is widely recognized as one of the leading experts worldwide. He is the author of more than 560 scientific publications on topics that range through catalysis, photodesorption dynamics, photoassisted surface chemistry, thin film growth and electronic materials. Over sixty Ph.D. degrees have been granted under his supervision. He was the 1990 recipient of the Kendall Award of the ACS, in recognition of his contributions to surface chemistry. In 1999, he received the Southwest Regional ACS Award for his contributions to research and teaching. He will receive the 2001 ACS Arthur W. Adamson Award for Distinguished Service in the Advancement in Surface Chemistry.


Prof. John M. (Mike) White

Martin Appointed to Waggoner Chair

Steve Martin has been appointed to the M. June and J. Virgil Waggoner Regents Chair in Chemistry this fall. Steve joined the faculty of The University of Texas in 1974 after receiving his Ph.D. from Princeton University in 1972 and successive postdoctoral years at the Institute of Organic Chemistry at the University of Munich and at Massachusetts Institute of Technology. Steve had been the Rowland Pettit Centennial Professor of Chemistry since 1992. During the course of his tenure here, he has played important roles in helping develop the department, particularly by being in charge of recruiting new graduate students for seven years, and more recently, by his membership on our Strategic Planning Advisory Committee. In addition to his excellent teaching record, Steve has established one of the world's leading research laboratories in the areas of synthetic and bioorganic chemistry. Perhaps he is best known for his ability to develop and apply new tactics and strategies to the concise syntheses of complex targets, mostly naturally occurring, that exhibit useful biological activity. More than 40 students have received their Ph.D. degrees under his supervision, and another 13 students completed the requirements for a Masters degree. Numerous undergraduates and postdoctorals have also received training in his laboratories. He has been honored for his outstanding accomplishments by receiving a


Prof. Stephen F. Martin

Continued on page 19.

Professor Bill Gardiner dies following a bike accident

Professor William C. Gardiner, Jr., 67, died on November 17, 2000 as a result of complications from a broken neck injury that he suffered in a biking accident. Bill was born on January 14, 1933, in Niagara Falls, New York, the son of William C. and Charlotte Gardiner. He graduated from Princeton University in 1954, where he was elected to Phi Beta Kappa and Sigma Xi. Receiving his first Fulbright Scholarship, he studied at The University of Heidelberg and at Goettingen University in Germany. In 1956, he returned to the United States to study at Harvard University, where he received a Ph.D. in Chemistry under former presidential science advisor George Kistiakowski. He joined the faculty of the UT Department of Chemistry in 1960.

Graduate student recruiting, March 2000: Arthur Catino and Prof. Gardiner

Over his forty years as a professor at UT, Bill achieved international recognition for his contributions to the science of combustion chemistry, and influenced the careers and lives of undergraduates, graduate students, postdoctoral fellows and colleagues. He carried on his research with colleagues in many countries, and he was especially connected with the Max Planck Institute in Germany and at The Hebrew University in Israel. He is widely published in scientific journals and published three texts on combustion. Among other awards, Bill received a Humboldt Fellowship, and was awarded a second Fulbright Scholarship.

Bill pioneered new concepts for understanding the mechanism of fire and combustion processes by analyzing the complex interaction of elementary chemical reactions with many physical transport processes such as turbulent flow, heat conduction, and diffusion by combining the concepts of mathematics, physics, biology, and chemistry. A reflection of the depth of his scientific knowledge was the publication in *Scientific American* of two articles in two entirely different fields, combustion chemistry and molecular evolution. He was famous for his unique style of teaching, which blended tough standards accompanied by a nurturing love for his students. UT President Larry Faulkner, who took Bill's statistical mechanics course in the late 1960's, was quoted in the Austin American Statesman as saying - "Bill Gardiner was a great teacher. It was maybe the best-taught course I ever took."

Bill had a wonderful sense of humor that was frequently expressed with a sophisticated use of spoken English (or German!). He loved to challenge his students, and sometimes they responded in unexpected ways. Homework was usually due at 5:00 sharp on the assigned day. When his wooden box used for collecting p-chem homework disappeared, Bill had the "trash can" - a metal drum cemented to a heavy metal frame - built in the machine shop. Homework could be inserted through a hole in the top, and Bill used a special wrench to open the lid and extract the homework assignments. This worked fine for a few weeks, ….until someone poured honey through the opening and all over the homework!

Bill enjoyed travel and adventures, where he combined his lifelong loves of people, science and the outdoors. An avid biker, he twice completed the MS 150-mile ride from Houston to Austin, and recently biked from the east coast to the west coast of Scotland. Bill also enjoyed rock and mountain climbing, camping, kayaking, and skiing. In the last few years he was an active player with the Lazers soccer team.

Then there was "THE LOOK!" Bill had a unique way of expressing his dissatisfaction when he felt things were not going the way he thought they should. Bill sometimes used "THE LOOK" as a special was of saying - "You should know better than that!" Neither his daughters growing up, nor his students, nor his faculty colleagues were immune to being given "THE LOOK."

Bill had a quick mind and a warm heart, and even those of us who were on the receiving end of "THE LOOK" will miss it. We will also miss Bill's sharp wit and his vital contributions to the department.

A memorial service led by the Reverend Malcolm Riker was held on November 21, 2000 in the chapel of St. Stephen's Episcopal School. A reception followed the service with photos celebrating Bill's life. Bill is survived by his mother; his wife, Dr. Regina Monaco; his daughters, Grace Baker of Houston, Charlotte Gardiner of Austin, and Amy Chanmugam of Austin; two grandsons, Rhett and Merritt Baker; his brothers, Peter Gardiner of Sunrise, Florida, and John Gardiner of Oak Park, Illinois; and his ex-wife, Gertraut Schimanski Gardiner. He will also be deeply missed by a large extended family, former and current students, staff and faculty colleagues. A William C. Gardiner Memorial Fund has been established, which will be used to assist chemistry students in their quest for an education. Donations can be mailed to the Department of Chemistry and Biochemistry, making note that it is for the Gardiner Memorial Fund.

— Marv Hackert and Bob Wyatt

IN MEMORIAM

Herbert John Belknap, Ph.D. 1955 (Ayres) ~ passed away July 7, 2000 at the age of 79. He was retired from Texas Instruments. Survivors include his wife, Rebecca; sons, Bruce and Philip (Suzane) Belknap; and a daughter, Bonnie Bellnap, as well as numerous other family members.

Howard Finley, Postdoctoral Associate (Hackerman) ~ died November 1, 1999. His wife, Linda Lee Finley, predeceased him. His children, Carolyn, Rischel, Susan Barney, Michael Finley, Robert Finley, Don Finley, and seven grandchildren survive him.

George P. Ford, Postdoctoral Associate (Dewar) ~ died October 5, 2000 at the age of 51. He was an associate professor in the Department of Chemistry at Southern Methodist University. He is survived by his parents; stepparents; siblings, David Ford, Lyn Jones and Joan Ford; his children, Joel Price and Leslie (Robert) LaMastus; and a grand daughter, Bethany.

John Franklin Draffen, B.S. Engineering 1937, M.S. Engineering 1939, Ph.D. Chemistry 1948 ~ died May 28, 2000.

George Wilson Drake, Ph.D. (Chemistry) 1936 ~ died November 11, 2000. He is survived by his children, George (Glenda) Drake, Jr. and Helen (Richard) Hartman; his siblings, Francis (Julia) Drake and Phyllis Frick; his sister-in-law, Dorothy Drake; his 6 grandchildren and 12 great grandchildren.

Odeal Schieffer Jarrell, B.A. Chemistry 1928 ~ died June 18, 2000. She was 93 and was preceded in death by her husband, Curtis Fletcher Jarrell. She is survived by her children, James C. (JoAnn) Jarrell, Curtis (Josephine) Jarrell, Sallie (Calvin) Wade, and Elizabeth (H. Richard) Allen; her brother, Hunter (Estella) Shieffer; and her grandchildren and great grandchildren.

Mark Charles Kelsey, B.S. Chemistry 1982 ~ died July 7, 2000. His wife, Debra Kelsey; brothers, Landon Kelsey, III, and Dr. Stephen L. Kelsey; sister, Christine (John) Kelsey Haddock; and nieces and nephews survive him.

Jack Matthews, B.A. Biological Sciences 1953, M.A. Chemistry 1956, Ph.D. (Reed) 1961 ~ is deceased.

William Henry Matthews, M.A. Chemistry 1933 ~ died in March 2000 at the age of 88. He is survived by his wife, Mary Louise Roueche matthews, and son, William Henry Matthews, III.

Michael Robert Mohr, B.S. Chemistry 1974 ~ died July 13, 2000 at the age of 47. He is survived by his wife, Murphy McBride; two sons, Michael and Samuel Mohr; his parents, Robert A. and Elizabeth Mohr; two brothers, Charles and Steven Mohr and a sister, Pat Wood.

Greg Poirier, Ph.D. 1991 (White) ~ passed away in September 2000.

Hattie Irene Randerson, B.A. Chemistry 1928, M.A. Secondary Education 1938 ~ died at the age of 93 on June 17, 2000. During her 44 years in education, she was selected as "Austin's Outstanding Teacher" (1959) and received the Scarbrough Foundation Award for Excellence in Teaching (1961). She is survived by her longtime friend and companion, Frances M. Hall, and nieces and nephews, Luther W. Randerson, Elizabeth R. Morris, Joe M. Randerson, Margaret P. Randerson, Mary G. Randerson, Greola Randerson, Robert Mayberry, Edward Mayberry, Lucille Hall, Mildred Saccardo, Jerry Keating, Lois George Boyd, and Jean Hammer.

Harold Robert Schmidt, Ph.D. (Hackerman) 1943 ~ died March 3, 2000 at the age of 81. He had retired in 1979 after 32 years of service with GE. Dr. Schmidt was a member of the Phi Lambda Upsilon Honorary Chemistry Society, the Sigma Xi Honorary Scientific Society, the Chemical Advisory Committee of Hudson Valley Community College, GE's Elfun Society, and a mentor with the Literacy Volunteers of Conway, SC. Survivors include his wife of 59 years, Martha V. Schmidt; two daughters, Patricia S. Simoni and Susan G. Jerome; a sister, Mickey Whirry; and four grandchildren.

Correction
Spring 2000, ***Chemical Compositions****:*
James Gerard Lee, B.A. Chemistry 1949 ~ passed away January 1, 2000. His wife, Frances Marcyle Cain Lee, predeceased him. A daughter, Nancy Lee Foley, and a son, James Kenneth Lee, survive him.

Reminiscences

UT Chemistry Department Remembered: 1944–1950


Dr. Leland L. Smith

The recent publication of several personal accounts of experiences in the Chemistry Department prompts me to write my own. My exposure to the Department began as an entering undergraduate student during WWII in 1944 and ended with my Ph.D. degree in 1950. I had come to the University with high school chemistry and several years experimenting in my home lab, including one explosion trying to make chlorine peroxide. As a product of the depression and in need of money, I took a part-time job as grader in the Department of Pure Mathematics to help support myself. There I encountered three unique UT faculty members, Harry Schulze Vandiver, Hyman Joseph Ettlinger, and Robert Lee Moore, all of whom helped shape my own professional thinking. Shortly to join this group was Henry Rudolph Henze of the Chemistry Department. These were men with pre-War educations with benefits that contrast greatly from present education benefits.

Although working in math, chemistry was my major interest, and after taking Chemistry 821 (organic chemistry) with Harry Lochte, Henze offered me a position as lab instructor for Chemistry 810, organic chemistry for premedical and pharmacy students, for the fall semester 1945. I recognized that they had to scrape the bottom of the barrel for lab instructors because of the War, but I jumped at the chance to make $84 a month instead of the $45 I earned in the Pure Math Department. We had three afternoon labs a week to tend, lecturing the class about the experiments to be done, arranging reagents to be used, supervising student work, grading examinations, and other odd work as needed.

Undergraduate degrees required four major courses: (1) Chemistry 801, general chemistry, with no advanced placement possible despite full high school coverage of the material, taught by Frederick Albert Matsen and John Leo Abernathy. (2) Chemistry 812 quantitative analysis, taught by C. R. Johnson, including counting swings for weighing on double-pan balances and analysis of limestone, in which case several components had to be measured serially. If one fouled up on one component, it was necessary to start over. (3) Chemistry 821, organic chemistry for chemistry and chemical engineering majors, taught by Lochte. (4) Chemistry 460 and 461, physical chemistry, taught by William A. Felsing. All lab data had to be recorded in a notebook and a carbon copy handed in at the close of each experiment, thereby to ensure that our reports used our data and not that of someone else. I took five semester hours of organic preparations, Chemistry 522, in Henze's laboratory the summer of 1946 in order to graduate August 1946, making my first hydantoin, pentylhydantoin, by the Bucherer reaction. Everyone at that time made a hydantoin one time or another in Henze's lab. We were all at work one day when a radio announcement of a nuclear bomb test in the Pacific was made. Henze surprised us by coming into the lab to hear the news.

I entered graduate school in the fall 1946 when the University went back to the standard two semesters a year and my pay jumped to $91 a month. Graduate instruction involved considerable course work and laboratory research. Organic chemistry students were required to take Chemistry 82, qualitative and quantitative organic analysis, taught by Lochte. This was a demanding course, consisting of lengthy lab work and weekly one-hour lectures. Thereafter, other course work was discretionary, although we were advised to take Chemistry 386, advanced organic chemistry taught by John R. Dice, so as to pass the required preliminary exams. We usually opted for special-topics courses. Lewis F. Hatch offered some petroleum chemistry courses; there were also biochemistry courses Chemistry 369 and 370 offered by Roger Williams, but few organic chemistry majors took these. We chose course work to suit our fancy, not being otherwise directed to do this or to do that. Grant supported work had not yet been invented, so the pressures of meeting grant expectations were not there. However, a few minuscule grants were had anyway; Phillip S. Bailey had an annual $500 grant from the Research Corporation of America!

Henze and Lochte ran the organic chemistry group together. Henze told me once that they had tried to provide instruction such that students could do something when they finished their degrees. Neither was favorable to teaching reaction mechanisms, and we had the derisive term "molecule pushing" for such nonsense. Bailey and Dice, both new young assistant professors in 1946, tried to teach mechanisms, but it was an uphill journey, and I felt deficient when I went to my post-doctoral at Columbia University. Every undergraduate there could explain everything with mechanism theory that I did not know. However, my feeling of deficiency diminished as I learned mechanisms and vanished after two encounters with advanced graduate students' inability to do things. One could not make a micro Dumas nitrogen gas burette collect properly,

a matter with which I had much experience, as we did our own Dumas analyses at UT. The finishing touch was my lab mate arguing on the telephone with a commercial analysis lab about an elemental analysis of one of his compounds. The analysis results did not fit his expectations. He told me that someday he was going to find out how they did those analyses.

I took several Chemistry 391 Special Topics with Henze, Lochte, and Bailey in which the contrast in style was most revealing. In those days there was no such thing as a role model or self-esteem. Nonetheless, Henze's influence, as those of my Pure Mathematics professors, must have been very effective; we were all treated alike, professionally, and left to develop in our own way. Dr. Henze's special topics classes were conducted in the Socratic manner, with all sorts of unexpected questions about different aspects of nitrogen heterocycle chemistry. We all were shaken one time or another by an unexpected question for which no amount of preparation could have helped. Henze called on us by surname. Dr. Lochte would come to class fresh from the library where he regularly read the latest acquisitions. He would quiz us over what he had just read. One learned in imperceptible ways the importance of regular reading of the latest literature.

In addition to major course work it was required to take a first minor subject (18 semester hours) and a second minor subject (12 hours), mine in mathematics and physical/inorganic chemistry respectively. Felsing's advanced thermodynamics physical chemistry Chemistry 82 and George W. Watt's advanced inorganic Chemistry 376 were *de rigueur* under advice for passing the preliminary exams. I also had Leon O. Morgan's radiochemistry Chemistry 378, and Matsen's Chemistry 372 physical methods. Felsing covered classic thermodynamics and assigned difficult problems but was uninspiring. He once told me he had forgotten the structure of acetone. I was appalled but have since come to realize how easy that might be. Although I recall the named reactions of organic chemistry, I have forgotten the chemistry. What is the Hell-Volhard-Zelinsky reaction anyway?

Both Morgan and Watt gave us the latest material from their own store of information. At that time there were no texts of any account on either subject. Watt talked a blue streak; we had to scramble to get notes made. He talked on about *s*, *p*, *d*, and *f* electrons that no one had heard about before. We had to work to get them straight. Morgan had just come from Manhattan District work and had all the basics of radioactivity to tell us. Both courses were exceptional in stimulating interest; both were demanding in performance.

Proficiency in reading chemistry in two foreign languages was required, German and either French or Russian being the common choices. We were allowed to select an approved chemistry book in the language to be tested for sight-reading or formal writing of a translated section. We always chose a book describing well-known lab procedures.

We had to take the dreaded prelims twice, once early but later repeated because of some procedural administration changes. Nobody liked prelims. People actually did fail them. We took two prelims one year, two more the next year. We took off several weeks ahead of the exams for study, reading all textbooks and class notes again, as the questions were of details, the Carnot cycle, etc. I read Glasstone's 1320 page Textbook of Physical Chemistry, twice in preparation. Then there was the major exam, in which among other items Hatch asked what you could make from petroleum. I could think only of motor oil and a few things like that. I knew of synthesis of compounds from petroleum, who wouldn't, but did not think that was the answer that was sought from the wording of the question.

Besides class work there were several other avenues for instruction. Departmental seminars were started about 1949, held on Saturday mornings, attendance required. Senior graduate students gave a seminar on some selected topic. Henze, Lochte, Bailey, and others attended the organic chemistry seminars, but seminars on Saturdays were regarded as an imposition and were not well liked by most students. Besides student seminars, there were Faculty Colloquium lectures and the Regional American Chemical Society had occasional meetings. There were no seminarists from outside the Department, as travel was expensive.

In those days there was an active Phi Lambda Upsilon chapter and I had been elected into the chapter as an undergraduate in the fall 1945. For our induction we had to obtain signatures of all current members on a porous plate, the kind one used in those days to dry preparations. If the plate got broken, start over. We also had to submit to an inquisition about chemistry while blindfolded. I was handed an obsolete glass percolater used for extractions of plant material and asked what it was. I knew what it was but thought it was made of metal. Then I was asked what was $HO\text{-}TH_2\text{-}O$, obviously some thorium oxide. "No, you fool, don't you know about HOT Water!" Another inductee was handed a hammer and, after discussion of explosives, was asked to strike the desk. Unbeknownst to him, nitrogen triiodide had been put on the desk, and the resulting response shook the inductee, to everyone's amusement.

I took a master's degree, with Bailey, lest my uncertain finances require stopping there. I made lots of

goos from which some crystalline products could be recovered. We did our own elemental analyses, and samples being heated for C&H regularly exploded in the micro Preg1 apparatus available, blowing combustion gases back out the wrong end of the tube, thus wasting the effort. Once we learned to apply heat suitably so that the sample did not explode, very nice micro C&H data were collected.

With my finances resolved by teaching support and a Pan American Refining Corp. fellowship of $1500 given me in my terminal year 1949-1950, this allowed Ph.D. work conducted under Henze. Many prior accounts describe Dr. Henze, both bane of existence for some, beloved professor of others. It may be that Henze's students have had more to say than those of other long-past faculty; he had great influence in molding our professional directions and thinking. He was the terror of premedical students and some graduate students. In those days, premedical students had to take Chemistry 810 with Henze. Premedical students then as now did not find chemistry all that enthralling and were usually afraid that Henze would find some way to fail them from the program. Henze's office desk was piled high with papers. He knew where everything was and became most upset when his student, Robert Leslie, as a favor, once straightened up his desk.

My Ph.D. degree with Henze involved both analysis and synthesis studies. Henze held forth weekly with us individually, reminiscing philosophically over many topics, not all chemistry. On one occasion he told me he hoped I would opt for an academic career and not for an oil company job. I left the University in the summer of 1950, but visited with Dr. Henze whenever I was back in Austin. He was always glad to see me and was most gracious in his comments about things.

The Chemistry Building is now much changed from what it was before all the expansion. There were four floors, the main office and analytical and physical chemistry located on the first floor, organic and biochemistry the second, and general, inorganic, and organic on the top floor. On the ground floor was College of Pharmacy space, a shop, teaching labs, and the old Unit Operations space abandoned by Chemical Engineering when their building was opened. The Mallet Library was on the second floor, over the big lecture room CB15. There was also a smaller lecture room CB218 on the second floor. Nothing was air-conditioned and ether regularly boiled in the bottle during the hot summer months.

Safety considerations were minimal, but no one had serious accidents in those days 1944-1950; it was merely expected that care and common sense would rule. I recall only two undergraduate accidents; I had spilled hot nitric acid on my hand in Chemistry 801a lab, got a brilliant xanthoproteic coloration, and an undergraduate had a vacuum distillation spray hot liquid on her. My first desk was next to the hydrogenation shaker apparatus in a closed-off east end of the second floor hallway. We never had adverse thoughts about this, though shaken bomb hydrogenations were conducted right next to our desks. In my post-doctoral at Columbia University the hydrogenation apparatus was out in a campus yard near the chemistry buildings, with a blow-out roof!

We did not get excited about potential dangers of hydrogenations, of using the Carius furnaces, of sodium metal to dry ether for Grignards, nor just about anything else. Somehow we were all very careful in what we did, despite use of dangerous materials. Nonetheless, there were troubles. One night a graduate student put a sealed tube with ammonia in it into a Carius furnace. The tube exploded, hitting a jar of sodium on an adjacent shelf, causing a mess. The student left the department shortly thereafter. An earlier explosion may have occurred in the lab used for Chemistry 81 organic analysis, as near the top of a window was a small hole with cracks around it, as the story goes caused by a bomb reaction going off years before. I recall a third accident when an assistant professor had placed an ether extract of fly eye pigments in a refrigerator, but power failed, and ether fumes exploded when current was restored.

In those days student life was also very different from today. Dress was a white tee shirt and khaki pants; no shorts, no beach attire. Women students wore dresses, not even on cold days did they wear pants, except perhaps rarely to laboratory. In place of the ubiquitous backpack of today, students carried clipboards and slide rules. We all lived within walking distance of the Chemistry Building. No one would have thought of living far off campus, neither could one afford to be away from campus and the cost of transportation. Bus rides cost a dime, tokens were three for a quarter.

Many graduate students lived in the old late 19th century houses that used to be near the campus. These places are long gone, replaced by University buildings and parking lots. Before the Experimental Science Building was built in 1950, Wichita Street had several rooming houses where many of us lived. There were tennis courts and a rooming house right across from one another.

I, like many chemistry students, ate meals at the Tejas Club at 26th Street just off Guadalupe. I learned there from Elton Soltis, a chemical engineering Ph.D. candidate, what Clausius said about entropy in the old Lewis and Randall thermodynamics text: "*Die Energie der Welt ist konstant; die Entropie der Welt strebt einem Maximum zu.*"

At the time the Dick Tracy cartoon strip had a character, Mumbles, whose henchman had to answer the questions "What did Mumbles say?" so we liked to ask one another: "What did Clausius say?" It took me over twenty years to acquire a copy of Lewis and Randall, but the quotation stayed with me all during my career.

We had to blow our own glass, making a micro picnometer for determinations of density. Any fancy glass blowing had to be arranged by begging graduate student Aubrey McClellan. He made several of us small glass vacuum distillation receivers from small Erlenmeyer flasks fitted with glass tubing and stopcocks. One guarded such valuable items carefully. We had no standard taper glassware; such items were costly. Cork or rubber stoppers wrapped in tinfoil worked. We made our own mercury-seal stirring devices and mercury-filled thermostats, and used running lab water to create a vacuum to "lift" ice water from a crock reservoir to cool condensers used on Grignard reactions; we redistilled all solvents; identities of all materials to be used were confirmed by melting or boiling points.

In those days graduate students had keys to the library, the locked toilet stall in the men's toilets, the elevator, as well as the front doors. The keys were a badge of trust, as we were allowed to work and use the library at all hours. Many the dark night, the hall lights all out, one would stumble down in the dark when leaving the building, perhaps at 2 AM.!

We were able to draw glassware from the second floor storeroom with no charge. An old gentleman, Mr. Roundtree, ran the storeroom, but it was rumored that he would drink up your ethanol if your bottle was so labeled and refill it with water. To thwart this possibility we usually labeled our ethanol as methyl carbinol. No one's methyl carbinol was ever taken.

Some of us innovated matters. Milton Getzendaner had devised micro methods in Chemistry 81 qualitative analysis. He had a desktop clinical centrifuge and was able to get his analyses done faster than we could with our macro test tubes. Identifications of unknowns were made strictly by melting points of solid derivatives or by boiling points; absorption spectra were unavailable and never considered, and neither were chromatography methods. I was one of the early organic chemistry students to try to use absorption spectra in my work with Henze. Both infrared and ultraviolet spectra adorn my dissertation, but neither I nor Henze had a proper grasp of absorption spectroscopy. Ultraviolet spectra were taken on a Beckman DU instrument, manually tuned through the wavelengths, with absorption data read off the dial and recorded by hand. Infrared spectra were taken similarly on a Beckman IR-2 manually scanned instrument in the Chemical Engineering Department and later on an early Perkin and Elmer Model 12C spectrophotometer. Mass and NMR spectrometry were things for the future, unused and unheard of in graduate instruction, although Frank Field then at UT had an early Consolidated Electronics CEC mass spectrometer located at the old wartime magnesium plant.

These were much appreciated formative years for us students, some of my contemporaries made a mark for themselves after UT: Henze students George L. Sutherland and H. David Medley went to industry, George to American Cyanamid, Dave to Celanese. George became research director at Lederle Laboratories a few years after I left that organization. J. Virgil Waggoner in his chemical industry made a fortune that he and his wife June have been kind enough to share with the University. Some of the War navy veterans were taken aback by Warren G. Meinschein when they learned he had been Lt. Commander in charge of a US destroyer, while they were merely ensigns. Warren later went on to prominent work on organic materials in meteorites.

Leland L. Smith

The University of Texas at Austin

- B.A. Chemistry 1946
- M.A. Organic Chemistry (Bailey) 1948
- Ph.D. Organic Chemistry (Henze) 1950

Postdoctoral Positions

- Columbia University (Elderfield) 1950-51
- Worcester Foundation for Experimental Biology (Schwenk) 1951-52

Employment

- Southwest Foundation for Research and Education, 1952-54
- Lederle Laboratories, Group Leader, 1954-60
- Wyeth Laboratories, Group Leader, 1960-64
- University of Texas Medical Branch–Galveston
  Associate Professor, 1964-68;
  Professor of Biochemistry, 1968-96
  Professor Emeritus of Biochemistry, 1996-present.

ALUMNI RETORTS

1947

Robert Lee Moore, M.A. (Anderson) 1944, Ph.D. (Felsing) ~ retired from the Hanford atomic plant in Richland, Washington in 1984. He reports that he is 80, can still fly sailplanes, bicycle, and complain. He has written an autobiography entitled *As I Knew Him*.

1950

J. Virgil Waggoner, M.A. (Bailey) ~ received a Distinguished Alumnus Award for 2000 from the UT Ex-Students' Association. Virgil is president and CEO of JVW Investments, Ltd and serves as vice president of the Board of Directors of Sterling Chemicals, Inc. He and his wife, June, have made numerous charitable contributions, many of which benefit the department, the college, and the university.

1953

Charles M. Maddin, Ph.D. (Ayres) ~ received an Ambassador Award from Southwestern College in Winfield, KS on October 14, 2000 in recognition of his assistance in the disposal of unwanted chemicals over the past year.

Ray Floyd Wilson, Ph.D. (Ayres) ~ was honored by Texas Association of College Teachers with a two-part biography in the *The Quarterly Bulletin*, beginning in the July/August/September 2000 issue. The article is entitled, "Ray Wilson: From Farm Boy to Giant."

1968

Dan Seilheimer, B.S. Chemistry, M.D. Baylor College of Medicine ~ reports he is still Professor of Pediatrics at Baylor College of Medicine. His oldest son is a National Merit Finalist and entered UT-Austin in Plan II this fall.

1979

J. W. (Bill) Rogers, Jr., B.S. 1975, Ph.D. (White) ~ was selected as Associate Laboratory Director for the Environmental and Health Sciences Division of William R. Wiley Environmental Molecular Sciences Laboratory. Before joining EMSL last year, Bill was professor and chair of the Department of Chemical Engineering at the University of Washington.

1980

Yuh-Lin Yang, Ph.D. (Monti) ~ works as a Senior Research Chemist at Albany Molecular Research.

1989

Walter G. Hubert, B.S. Chemistry, B.S. Molecular Biology; Ph.D. Oncology, University of Wisconsin, Madison (1995) ~ joined the Departments of Dermatology and Microbiology-Immunology at the University of Arkansas for Medical Sciences as assistant professor. He is continuing his work with oncogenic human papillomaviruses, focussing on the contribution of DNA replication to the pathogenesis and tumorigenicity of the viruses that cause cervical cancer. He remembers learning a lot as an undergraduate research assistant in Prof. Hackert's lab.

1990

Charles Stuart Berkman, B.S. Chemistry, J.D. (UT-Austin) 1993 ~ is an associate at Lyon & Lyon, La Jolla, California. His practice is in intellectual property law, with an emphasis on chemical and biotech patent prosecution. He was married to Kathryn Stewart Berkman in March 1999.

1991

Claire Mazow Gellfman. Ph.D. (Robertus) ~ recently moved back to Texas after 9 years in CA. She is a Scientist with Lexicon Genetics, Inc. in The Woodlands, and can be reached at cgelfman@lexgen.com.

1993

Liwen Zhang, M.A. (Appling) ~ is a Research Scientist at Merck & Company, Edison, New Jersey.

1994

Brett B. Busch, B.S. Chemistry; Ph.D. Chemistry, University of California Irvine ~ reports he is working at Dow Chemical R&D, Freeport, on Radiopharma project for tumor detection/treatment. He married in June.

Richard E. Thomas, M.A. (Iverson) ~ will report to USS O'Bannon as Executive Officer in December 2000. USS O'Bannon is homeported in Mayport, Florida and will deploy in December for counterdrug operations.

1996

Robert D. Culp, Ph.D. (Cowley) ~ is employed as a Research Chemist, Styrene Catalysts, at Shell Chemical in Houston.

1998

Angela Phuc, B.S. Biochemistry ~ relocated to San Francisco where she is employed as a Research Assistant in the Chemistry Department at Elan Pharmaceuticals.

Jason Wians, B.S. Biochemistry ~ is serving in the U.S. Peace Corps in Haiti. He writes expressing his appreciation for his positive experiences in the department and remembers the help he received from Ruth and Jason Shear.

2000

Robert J. Shimanek, III, B.S. Chemistry ~ is enjoying his new job at 3M Fiber Optics and Electronics division. Also, he was married in June.

Postdoctoral Associates

Jeffrey Houser, Postdoctoral Associate (Magnus) ~ has taken a job at Bristol-Myers Squibb.
Diane Kneeland, Postdoctoral Associate (Anslyn) ~ was elected Reporter of the Central Texas ACS.

Beckman, continued from page 1.

who will ultimately become prominent leaders in their scientific and professional pursuits, and to stimulate greater awareness of the importance of providing quality undergraduate research opportunities. The Arnold and Mabel Beckman Foundation is an independent, non-profit foundation, established for the purpose of supporting basic scientific research, primarily in the fields of chemistry, biochemistry, and medicine. Considered two of the greatest philanthropists of all times, Dr. and Mrs. Beckman have contributed approximately $300 million to the advancement of research and education. The most well-known accomplishment of Dr Beckman would be his invention of the pH meter, which led to the founding of his company, Beckman Instruments.

Our first five Beckman Scholars, chosen after a grueling application process, were as follows: Sara Faulkner (Prof. Andy Ellington, *Directed evolution of an acid stable b-glucuronidase*); Cindy Ly (Prof. Jason Shear, *Sensitive and selective strategy for probing D-amino acids in biological microenvironments*); Sarah Martinez (Prof. Dean Appling, *DNA microarrays and homocysteine metabolism*); Shanti Nulu (Prof. Brent Iverson, *From handicapped to gain-of-function: Directed evolution of an E. coli protease*); and Hau Ho (Prof. Mike White, *High dielectric constant materials for microelectronics: Modeling interfaces of zirconia with silicon*). These five undergraduates worked in their research groups supported by the Beckman program from Summer 1999 until Summer 2000, culminating in the Beckman Scholars Research Symposium, a gathering of the 170 Beckman Scholars and their mentors from around the country at the Beckman Center in Irvine, CA. All five scholars presented posters on their work and represented the department with great success. Two of our scholars and their professor mentors were invited to dine at the head table with Dr Beckman himself at the final dinner.

The Beckman Scholars met our extremely high expectations — they all had independent original research topics during the Program period, and are currently in various stages of writing first-author manuscripts on their studies. Three have graduated: two with high honors (Cindy & Sarah), and one with a double degree in both Chemistry and Biochemistry (Hau). Sarah was named a Deans Honored Graduate after single-handedly organizing and constructing a DNA microarrayer, now used as a departmental facility. Our scholar graduates are all continuing their scientific endeavors in a PhD program, an MD/PhD program, and at a biotech company. Sara and Shanti continue to research in their mentors' groups, and are in their senior year at UT.

Our department has a high commitment to undergraduate research, offering course credit for students wishing to undertake research as part of their degree. In the last academic year, 146 undergraduate students received credit for research. Many students stay affiliated with a single research group for several years, before continuing their dedication to scientific research in graduate school. The increased attention directed toward undergraduate research in our department as a result of the last Beckman Scholar program, has resulted in several developments. As a part of the Beckman Scholar program, we established a departmental Undergraduate Research Focus Group that meets every week. Membership of the focus group is open to any student performing undergraduate research within our department, who is willing to commit to regular attendance and participation. In addition to scholarly pursuits, this group has developed into a social group of friends with the shared common interest of excellence in scientific research, resulting in a number of social and service activities. We are creating a set of webpages to advise interested students on how to go about getting into research groups. We have been invited to apply for a second round of Beckman Scholar funding, to start in Spring 2001, and are confident that our performance in the past year warrants further funding. However, the Beckman funding is a concentrated amount of money for a select few. There are many other worthy undergraduates in the department who need encouragement, and so we are actively seeking individual and company sponsorship to create summer research fellowships. If you are interested, please contact me at DrRuth@mail.utexas.edu.

—Ruth Shear

Martin, continued from page 11.

number of awards, including the Arthur C. Cope Scholar Award in 1996 and an Alexander von Humboldt Senior Scientist Award for the period 1995–1997. He has served on the NIH Medicinal Chemistry Study Section as well as numerous other editorial boards, and he is presently the regional editor of *Tetrahedron* for the Americas. He has consulted for a number of pharmaceutical and biotechnology companies, and he is a consultant for Elan Pharmaceuticals and Abbott Laboratories. He has published nearly 200 papers in primary journals together with several reviews and chapters in books, and he is co-author of the popular undergraduate laboratory book *Experimental Organic Chemistry: A Miniscale and Microscale Approach*.

As always, we welcome updates on your personal and professional news.

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