the university of texas at austin
Fall 2001
CHEMICAL Compositions
chemistry & biochemistry
departmental newsletter

"Nanoscience and Nanotechnology Center Makes Rapid Progress"

There is no question that great breakthroughs in science and technology in the 21st century will occur in the emerging, interdisciplinary fields of **NANOSCIENCE AND NANOTECHNOLOGY**. Nanoscience is focused on the unique properties of nanoscale materials and devices, and the techniques that are used to synthesize, assemble and characterize such structures. The application of nanoscale materials and devices is denoted by the term nanotechnology. It is widely believed that nanotechnology will have an enormous impact on industrial technologies in such diverse areas as medicine, electronics, computers, biomedical engineering and biotechnology. For example new "nano-bio-electronic materials" are being developed for computers of the future and for chemical and biological sensors that will dramatically revolutionize medical care and bring a new level of safety and efficiency to manufacturing. Nanotechnology will revolutionize material science, producing inexpensive materials with extraordinary properties, such as super-strong materials for manufacturing, bright-emitting materials for television and computer displays, and much more.

Paul Barbara

As reported in the Fall 2000 issue of Chemical Compositions, The University of Texas at Austin established the Center for Nano- and Molecular Science and Technology (CNMst) on October 1, 2000. The CNM is a multidisciplinary, collaborative research center within the **Texas Materials Institute (TMI)** involving faculty in Chemistry and Biochemistry, Biomedical Engineering, Physics, Chemical Engineering, Electrical and Computer Engineering, and other departments in the Colleges of Natural Sciences and Engineering. The mission of the CNM is to foster education, science, and engineering in nanoscience and nanotechnology at The University of Texas. Recognizing the promise of nanoscience and nanotechnology, the Chemistry and Biochemistry Department has set these areas among its highest priorities for future faculty hiring. In addition, UT has established a "hiring cluster" of six additional faculty in nanoscience and nanotechnology spread over various departments. The CNM Director is Paul Barbara, the RJV Johnson-Welch Chair in Chemistry.

Research in the center is presently comprised of four multidisciplinary research groups (MRG), although collaboration across MRG boundaries is also extremely active. The MRGs are focused in the following research areas:

- **Bio-Engineered Materials and Bio-Nanoscience**
- **Quantum Confined Nanoscale Materials**
- **Novel Tools for Nanoscale Device Patterning, Imaging, and Characterization**
- **Molecular Nanoscale Electronic Materials**

Continued on next page...

IN THIS ISSUE

The recently installed high-resolution transmission electron microscope (JEOL-2010F FasTEM) in the CNM. This instrument is used to directly image the structure of a wide range of samples including Si nanocrystalls, nanoparticle/biological composites, "quantum wires" and much more.

Continued from front page

These research areas have been the focus of several successful research collaborations and group grants at the University involving CNM faculty. Please refer to the CNM website http://www.cm.utexas.edu/CNM/ for more details, including references to recent articles from CNM researchers. At present CNM faculty and their research groups are spread over many buildings. The UT administration is planning to build or renovate ~30,000 sq ft of contiguous research space for CNM collaborative research and research facilities. A fund-raising campaign to support CNM research and CMN facilities is also underway.

Research tools in nanoscience and nanotechnology are rapidly developing. The complexity, required precision, and novelty of this type of instrumentation make this technology very expensive. *The Center has been able to add nearly 5 million dollars of critical instrumentation in the last year with funding from the Welch Foundation, the NSF, the ARO, industrial sources, and university matching funds.* Two of the most important new CNM instruments are an E-Beam Lithography system for preparing nanostructures and a high resolution transmission electron microscope (TEM) for imaging nanostrucures. Most of the CNM research facilities are located in 6,000 square feet of newly renovated laboratory space in the **31NN** complex in the ENS building on the main campus of The University of Texas. The new CNM instrumentation facilities add to the extensive shared instrumentation facilities for materials characterization at in the **Texas Materials Institute**, and for electronic device and materials preparation in the UT's **Microelectronic Research Center**, which includes 12,000 square feet of class 100 and class 1000 clean room.

There are a number of research projects in CNM from faculty in Chemistry and Biochemistry. Research includes the development of new scanning probe microscopies to study physical properties in functioning organic LED display devices and sensors, single molecule biochemistry/bionanoscience, and organic electronic device operation and construction (Barbara). The electrical and electro-optical properties of molecular materials with applications to memories (organics, metalloporphyrins) and electroluminescence (inorganic salts) and the electrochemistry of semiconductor nanoparticles are being investigated (Bard). Another research focus is understanding and using the process by which nature makes materials in order to design new hybrid organic-inorganic materials (Belcher). Understanding how mesoscale and nanoscale structure affect materials properties and dynamics, and how molecular interactions can be utilized to build materials with specific structures on multiple distance scales (Vanden Bout) are being investigated. Biological reagents are being developed that can interface with devices at the nanoscale (Ellington). Specific details about the projects are available at the CNM and departmental websites. High-resolution optical and scanning probe imaging strategies for nanoscale characterization of interfacial reactivity are being developed (Stevenson). An interdisciplinary team has been formed that will target the design and construction of microma-

Glove Box

chined array sensor structures, known as an "Electronic Tongue" (McDevitt, Anslyn, and Shear). Surface functionalization and patterning via synthetic duplex oligomers which, akin to DNA, self-assemble according to a molecular recognition algorithm inherent in the monomeric units are being studied (Krische). The use of self-assembled polymers as components of building up nano-structures and composites are being explored (Webber).

—Paul Barbara

The Raith-50 Electron Beam Lithography system in the CNM. This nanolithography system is capable of writing using a focused beam of electrons at sub optical resolution and can be used for mesoscopic and quantum device fabrication, or other ultra high resolution patterning.

FROM THE CHAIRMAN

Jim Holcombe

I write to you on the brink of the holiday season and at the edge of the semester's end. The atmosphere around the University is generally similar to what it has been for decades: frantic students trying to finish papers and lab reports while preparing for final exams. The festive holiday atmosphere around campus offices and Austin contrasts sharply with the less-than-festive mind set of the students as they brace for the last dash toward the end of the semester. The end-of-the-semester must be a "memorable experience" since most of us can certainly relate and recall the feeling, even after many years away from the University. Even to this day, I will occasionally have a nightmare that finds me at the start of final week with the realization that there was a course that I forgot I had signed up for. As a result, I found myself faced with a final exam in a course where I had not attended any of the classes! (While the source of this dream may be complex, it is easier to understand than the dream where you end up in class naked.)

Although I penned this epistle at the end of the semester, you're now reading the departmental newsletter at the start of a new semester. To compensate for that brief period of chaos at the end of the semester, jubilant optimism emerges at the start of the new year. At this time, the slate is clean: No further need to worry about last semester's P-chem lab; first semester organic is a thing of the past; the term paper wasn't the best one written, but it was written and there's little need to revisit it. Now, it begins again with sincere expectations of staying on top of the courses, not putting off the lab reports until the night before they're due, etc., etc. I'm certain that all of us can appreciate what a joy it would be if twice a year our desktops were cleared of all projects, and the "slate was clean." I only wonder whether we could still cope with the "memorable experiences" at the e*nd of the semester!*

The Fall 2001 semester concluded with 45 students earning their Bachelors degrees in chemistry or biochemistry and 14 students receiving Masters or Ph.D. degrees from the department. Uniquely, these graduates along with our continuing students will be entering the world or starting the semester with a different perspective because of the traumatic events that have befallen the nation this fall. Some will have a different view on their priorities in life, where they must continue to blend their responsibilities as a student with a new, broader perspective. Such scaling of life's bigger picture has traditionally been reserved for those with years of experiences (i.e., the old folks). However, it is now shared across generational lines as introspection has been thrust on all of us.

The department and the University community also suffered this fall from the unexpected passing of Prof. **William (Billie) Shive** *(see p. 8)*. In addition to being part of the University for more than 60 years, he also served as departmental chairman from 1961-1970. At a memorial service we were all reminded of Bill's soft-spoken wisdom and vision that he imparted to his students, the department and the University. And yes, he traveled daily to the campus in his '50 Chevrolet with the aged coat of gray primer announcing a pending paint job. In my imagination I had this vision of Gentleman Bill Shive arriving in his blue suit and a small smile on his face as he cruised through campus in this freshly painted, cherry red '50 Chevy decked out with mag wheels, chrome pipes and pin stripes..... He will be missed.

Looking past the shadows that were cast this fall, the first half of the academic year had many bright moments. **Mike Krische** and **Ben Shoulders** secured NSF funding for another departmental NMR to complement the recently purchased hands-on, teaching NMR we purchased for the sophomore organic students. Rick Quy has orchestrated the transition to a new storeroom operation that will permit on-line ordering from the laboratory, improved pricing and faster deliveries. **Paul Barbara**, with the help from many colleagues, has launched the Center for Nano- and Molecular Science and Technology (CNM) *(see p.1)*. We are in the process of looking over several outstanding faculty candidates who will enhance the strength and size of the department. We will be leading the University with the first web-based, distance-learning course assembled by **Joe Lagowski** for CH301 students. Finally, our undergraduate and graduate students continue to excel when they reach the "real world" or graduate/professional schools. While only making incremental contributions to these already outstanding young men and women, we are erringly given credit for doing an excellent job in "shaping" these young people. I've often been tempted to correct these erroneous opinions of our net contribution… but then I figured, "Who does it harm if I leave them with this small misunderstanding?"

— Jim Holcombe

Faculty Awards and Honors

Prof. Emeritus Daniel Ziegler

Congratulations to Dr. Daniel M. Ziegler, Professor Emeritus, Biochemistry. Dan's undergraduate alma mater, Benedictine College in Atchison, Kansas, presented him with an honorary D.Sc. at their commencement in June of this year. The degree was awarded for Dan's many contributions to the fields of xenobiotic metabolism and molecular toxicology.

PAUL BARBARA will receive the **2002 Inter-American Photochemical Society Award.**

ANGELA BELCHER was named a **2001 Packard Fellow** and to the first class of the **Harrington Fellows** program. She was also awarded the **DuPont Young Investigator Award.**

RAY DAVIS was selected for the **Outstanding Professor Award** given by the UT-Austin freshman honor societies, Alpha Lambda Delta and Phi Eta Sigma. He received this award previously in 1983, 1984, 1987, and 1992. Also, Ray was elected vice-president of the American Crystallographic Association for 2002. He will serve as chair of the national organization in 2003.

EDWARD MARCOTTE received a Camille and Henry Dreyfus New Faculty Award for 2001.

Alumni Retorts

1975

Ricardo Fuentes, Ph.D. (Morgan) ~ is employed in Dow Chemical's Corporate Venture Capital Group after a 21 year research career at Dow. He reports his current investment focus is on materials science and life science matters.

1992

Robert Selliah, B.S. (Chemistry) 1986, Ph.D. (Gilbert) ~ is currently employed at ArQule, Inc. in Woburn, MA as Principal Investigator and Project Team Leader in the Lead Optimization Department, carrying out research in pharmaceutical drug discovery.

1993

Christopher S. Eddleman, B.A. (Biochemistry), Ph.D. (Physiology and Biophysics) 1999, University of Texas Medical Branch, Galveston ~ is a third year medical student at Texas Tech School of Medicine. Chris reports he had numerous publications in peer- reviewed journals concerning the mechanisms and biophysical details of nerve repair after injury, and he is on a subcommittee at Texas Tech SOM in Amarillo trying to establish an office of research and promoting research activities to students, residents, and junior faculty.

1994

Richard E. Thomas, MA (Iverson) ~ has been selected for promotion to Commander in the US Navy. He is currently serving as the Executive Officer on the USS O'Bannon, which recently returned from a 5-month counter narcotics deployment and is homeported in Jacksonville, FL.

Oswaldo Aldas-Palacios

1997

Oswaldo Aldas-Palacios, M.A. 1985, Ph.D. (Davis) ~ was elected Dean of Research at Escuela Poletecnica Nacional, Quito, Ecuador, July, 2001.

Department Alumna Receives Prestigious Award

Diana L. Lundelius, B.A. Biochemistry 1978, received the 2001 Champion of Excellence Award from the Academy of Certified Hazardous Materials Managers (ACHMM), at the organization's national conference in Chicago on Tuesday August 21, 2001. The Academy presents the award annually to selected nominees who have made significant contributions to the field of environmental health and safety during the previous calendar year. Ms. Lundelius is the national coordinator of regulatory compliance services for TERRACON, a nation-wide environmental and geotechnical engineering consulting firm. She was recognized for her technical leadership in industrial environmental compliance, as a seminar presenter, regulatory negotiator, published author, and officer for the Dallas-Fort Worth ACHMM chapter. In addition to receiving the national award, Ms. Lundelius presented a technical paper at the conference on a storm drain dye test method she developed. She is also co-author of "Chapter 3: Chemical Analysis" in the upcoming sixth edition of *Managing Hazardous Materials*, the CHMM certification exam textbook published by the Institute of Hazardous Materials Management.

Ms. Lundelius is active in several Dallas-area environmental professional groups, including the Dallas Chamber of Commerce Environmental Committee, and has also served as a judge captain for the Dallas Morning News Regional Science Fair. Her company's Texas division, HBC Engineering, recently received the 2001 Phoenix Award from USEPA Region VI for innovative brownfields restoration of the American Airlines Center site in Dallas. The project and award were described in a feature article in the August 6, 2001 issue of TIME magazine.

Diana L. Lundelius

While at UT, she held offices in the Alpha Chi Sigma and American Chemical Society student affiliate chapters, and was an honorary member of the student chapter of AiChE. During her senior year (1977-78), the Chemistry Department nominated her for university-wide Outstanding Student. During her undergraduate study, she was a Clayton Foundation lab assistant for Dr. James R. Brown and Dr. Patricia Q. Behrens. Her lab research under Drs. Brown and Behrens included the preliminary amino acid sequence analysis of baboon serum albumin. Her professional career includes nine years as a chemistry lab supervisor for the City of Austin Electric Utility, two years as an industrial manufacturing environmental manager and deionized water specialist in Dallas, and ten years as a consultant in environmental regulatory compliance for industrial manufacturing. For other alumni and students in the College of Natural Sciences who find her last name familiar, her uncle is Professor Emeritus Ernest Lundelius, mammalian paleontologist in the Department of Geology who supervised the excavation of the downtown/1st Street mastodon in the 1980's.

Lundelius presentation at ACHMM

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Dr. and Mrs. William Shive

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Natural Sciences Annual Fund Donors September 2000 – August 2001

Mr. C. Alfred Bailey, Jr.
Mr. Michael P. Dobrasko
Dr. Michelle W. Foster
Mrs. Doris H. Levine
Dr. Kenny M. Nicholas

R.B. and Margaret (Peggy) Sibley Lewis are joined by Marv Hackert (l) and Christine Fleming of the CNS (r) to celebrate the establishment of the R. B. and Margaret Lewis Endowed Presidential Fellowship in Biochemistry as a permanent endowment to be used to provide fellowships to graduate students in Biochemistry. Peggy Lewis received her M.A. degree in biochemistry with Professor Robert Eakin in 1948 and then worked for in the laboratory of Professor William Shive as a research associate.

IN MEMORIAM: Professor William Shive

William Shive, prominent scientist, educator, administrator, and benefactor, died October 2, 2001, in Austin. He is survived by his wife Gwyndolyn White Shive, whom he married in 1941, two daughters - both biochemists - Kathleen S. Matthews (Rice University) and Karen S. Browning (UT Austin), and two grandchildren, Thomas W. Browning and Kathryn L. Browning.

William Shive

Bill was born on December 20, 1916, in Commerce, Texas. He was the middle of three children born to William C. and Myrtle B. Shive. He worked hard from an early age, and he put himself through East Texas State Teacher's College, graduating with a B.A. degree in 1937. He entered the University of Texas in 1937 and received an M.A. degree in Chemistry in 1939 and a Ph.D. degree in 1941, with a major in Organic Chemistry under the supervision of Professor H.L. Lochte. His first post was as a Research Associate and Instructor in Organic Chemistry at the University of Illinois at Urbana, 1941-1942. He joined the Faculty at Tulane University in 1942 and served as Instructor and then Assistant Professor of Chemistry, 1942-1944. Bill returned to the University of Texas in 1944 as a Research Scientist in the Biochemical Institute (later named the Clayton Foundation Biochemical Institute). In 1945, he was also appointed Assistant Professor of Chemistry. He served as Associate Professor, 1947-1949; Professor, 1950-1987; and Chairman of the Department of Chemistry, 1961-1970. In 1985, he was named the first recipient of the Roger J. Williams Centennial Professorship in Biochemistry.

As a scientist, Bill enjoyed a national and international reputation for major contributions to our understanding of intermediary metabolism and nutrition. In the late 1940's and early 1950's, Bill and his associates developed a new method for elucidation of biochemical processes in living organisms using metabolic antagonists. He used these inhibition analyses for major advances in biochemistry and nutrition, particularly pinpointing the then unknown roles of vitamins. For this research in 1950 he received the Eli Lilly Award in Biological Chemistry sponsored by the American Chemical Society. Among his major contributions are: (1) discovery of the role of folic acid in transfer of single carbon units, the role of biotin in carboxylation, and the role of vitamin B12 in methylation and deoxyribonucleotide synthesis, (2) discovery and synthesis of the three formate-carrying cofactors of folic acid, (3) identification of the first intermediate (5-amino-4-imidazole carboxamide) in purine biosynthesis and (4) development of an assay for the anti-pernicious anemia principle, Vitamin B12. In addition, he developed a procedure for the isolation of vitamin B12 from natural sources (for which he was awarded a US patent) and elucidated the biological role(s) of this vitamin in the anemia problem.

Bill recognized that effective utilization of nutrition in medical practice is dependent upon the development of methods for assessing the nutritional status of each individual and identifying the factors that limit the nutritional responses of an individual. In the late 1970's, Bill and his

associates initiated an approach to this problem using human lymphocytes. Over a period of several years, they developed a serum-free, chemically-defined culture medium that supports lymphocyte proliferation, and used it to develop assays to assess the metabolic and nutritional status of an individual's cells. These assays provide direction for effective biochemical intervention and for studying receptor-mediated cell responses. For this research, Bill received in 1983 the first Roger J. Williams Award in Preventive Nutrition.

Bill was highly regarded as a teacher and research mentor. He directed the work of thirty-three Masters students and fifty-seven Doctoral students. Typical of comments by former graduate students are the statements that "Dr. Shive was an excellent research mentor, a man who is patient, yet demanding of personal excellence" and "Dr. Shive brought very high standards both to the classroom and to the research laboratory. He was always supportive of students, and guided many to successful professional careers." In a lighter vein, to the many students in his lectures, he was "the fastest man in the west with a piece of chalk."

William Shive served with distinction on many local and national committees. He was a member of the Nutrition Study Section, National Institutes of Health, 1969-1973, and Chairman in 1972-1973; a member of President Ford's Biomedical Research Panel and Chairman of its Interdisciplinary Cluster on Nutrition, 1975-1976; Liaison Officer for the University of Texas System to the Robert A. Welch Foundation, 1970-1986. He was a member of the American Society of Biological Chemists, American Chemical Society, American Institute of Nutrition, and Sigma Xi.

In recognition of his many contributions to the University, Bill was inducted into the Hall of Honor of the College of Natural Sciences in 1997. Although he relinquished his teaching duties in 1987, he maintained a significant research program and was active in the laboratory until the day before he died.

William Shive was a truly unique individual. He was a person of superior intellect, very high standards, and high integrity. He was unpretentious and steadily optimistic. His private life was marked by numerous contributions and remarkable generosity of spirit, often unnoted and private by his personal choice. He worked to support the establishment of the Religious Studies Program at The University of Texas at Austin, dedicated to the study of religions and how religions develop, change or operate in particular social contexts. Within our Department, Bill and Gwyn helped establish several endowments, including the Roger J. Williams Centennial Professorship in Biochemistry, the Benjamin Clayton Centennial Professorship in Biochemistry, the William Shive Centennial Professorship in Biochemistry, the Clayton Foundation Biochemical Institute Regents Lectureship in Biochemistry, the Vista Chemical Company Regents Endowed Lectureship, the Roger J. Williams Endowment for Biochemical Nutrition, and the Biochemical and Biomedical Research Endowment. Bill, like his close friend and colleague Roger Williams, was a strong advocate of the benefits of basic research in biochemistry and its impact on nutrition and health. Indeed, the Biochemical Institute was established with these goals in mind. In establishing the Biochemical and Biomedical Research Endowment, Bill and Gwyn Shive have laid the groundwork for supporting continued excellence in basic biochemical research and its impact on improving human health. The family has requested that memorial gifts in Bill's honor be used to build this endowment for future support of basic research in biochemistry and its value to improved health and nutrition.

Marvin Hackert

We have all gained from our association with him. Our department, our college, our University, and our community have all benefited from his being. Bill Shive will be greatly missed.

— Marv Hackert

The above was excerpted, in large part, from a Memorial Resolution prepared by Lester Reed, Joanne Ravel, and Dan Ziegler. You can find more information about Bill Shive, Roger Williams and the Biochemical Institute on our departmental web site at: ***http://www.cm.utexas.edu/bioinst/***

From the Graduate Adviser...

Jennifer Broadbelt

The Department welcomes a new class of graduate students. Forty-nine new students arrived in mid-August for a busy week of orientation, including safety training, TA training, and social activities. Many of these students are interested in interdisciplinary research areas, and the ability to undertake cross-departmental and cross-college research is an emerging strength of our faculty. If you haven't viewed our departmental Web site lately, please tune in to www.cm.utexas.edu and check out the faculty research pages and all the links to the new interdisciplinary centers and institutes on campus, including the Institute for Cellular and Molecular Biology, the Center for Molecular and Cellular Toxicology, the Environmental Sciences Institute, and the Texas Materials Institute. One of our high points of the graduate recruiting season was the selection of Stephen Maldonado, a new first year student, for one of the prestigious Harrington Fellowships. Stephen received a three year fellowship that carries an annual stipend plus tuition/fees. He was one of only seven incoming graduate students from the entire University to receive this award. He was also selected for a highly competitive NSF fellowship. Stephen, who hails from University of Iowa, maintained a 4.0 GPA as an undergraduate and plans to pursue research in electroanalytical chemistry. Recruiting at the graduate level has remained a very competitive endeavor, and our ability to give fellowships and other recruiting bonuses helps with this challenge.

— Jennifer Brodbelt

Departmental M.A. and Ph.D. Graduates

Ph.D., Fall 2000
Valeri Barsegov (Rossky/Prigogine)
Terry S. Cohen (Webber)
Sara J. Eames (McDevitt)
Michael A. Fiorentino (Laude)
Christopher J. Fowler (Sessler)
Brian J. Goolsby (Brodbelt)
Christopher L. McAdams (Willson)
Chad Ostrander (Laude)
John M. Pascal (Robertus)
Michelle L. Reyzer (Brodbelt)
Julie Teetsov (Vanden Bout/Fox)
Nick E. Tran (Lagowski)
Shintaro Yamada (Willson)

M.A., Fall 2000
Michael N. Zimmerman (Magnus)

Ph.D., Spring 2001
Kara M. Bortone (Robertus)
James P. Davidson (Martin)
William P. Fitts (White)
Vladimir M. Guelev (Iverson)
William B. Holmes (Appling)
Darin W. Laird (Gilbert)
Darcie J. Miller (Robertus)
Thomasin C. Miller (Holcombe)
Mary B. Satterfield (Brodbelt)
Timothy S. Snowden (Anslyn)
John D. Venable (Holcombe)
Andrew J. Zych (Iverson)

M.A., Spring 2001
Hang Hgoc Huynh (Lagow)
Leticia Valadez (Holcombe)

Ph.D., Summer 2001
Theodore E. Curey (Shear)
Mary Jane S. Gordon (Shear)
Victoria D. Kutilek (Kitto)
Courtney L. Lopreore (Wyatt)
Kristen C. Smith (White)
Andrea D. Wells (McDevitt)
Zhiwen Zhang (Anslyn/Kodadek)

M.A., Summer 2001
none

Departmental Staff Changes


Chuck Cooley

Chuck Cooley retired after five years working in the Chemistry and Biochemistry Procurement Office. He will now have more time to spend with his family and especially his grandchildren.


Dotty Frasch

After 14 years as the department's Executive Assistant, Dotty Frasch has accepted another position on-campus, that of Financial Officer with the McDonald Observatory.


Jeff Evelyn

The department is fortunate to welcome Jeff Evelyn as our new Executive Assistant. Jeff comes to us from the College of Natural Sciences Dean's Office where he was their human resources officer.

IN MEMORIAM

Betty Wallace Croxton, B.A. Chemistry 1945 ~ died July 12, 2001 at the age of 77. She is survived by her husband, Charles H. Croxton, Jr.,; daughter Amy (Wayne) Baker; and grandchildren, Charles C. Baker and Karen F. Baker.

Marsha Kalmore Diamond, B.A. Chemistry 1947 ~ died November 4, 2000. She was retired from the El Paso Independent School District and is survived by four children, six grandchildren, and four great grandchildren.

Eugene Oliver Forman, M.A. Chemistry 1941 ~ died November 19, 2001. He was predeceased by his spouse, Delta Kemp Forman. During WWII, "Gene" served in the Navy. After the war, he and Delta settled in new Orleans where he worked for the US Department of Veterans Affairs. Delta passed away in 1997 after 60 years of marriage. She created the Kemp-Forman Memorial Endowed Presidential Scholarship, named for herself and Gene, as well as her sister.

Jo-Ruth Graham, B.S. Chemistry 1948 ~ died December 17, 2000. Ms. Graham retired from UT-Austin, Department of Zoology in 1982.

Jack S. Krohmer, Ph.D. (Frederick J. Bonte) 1961 ~ died July 7, 2001 at the age of 79. He spent his life dedicated to the research and treatment of cancer. Dr. Krohmer is survived by his wife of 55 years, Doris Lyman Krohmer; his son, Jack L. Krohmer, and his daughter, Candace K Cooke and her husband, Michael Cooke. His grandchildren include Christopher A. Carr, Colin L. Carr, Raymond E. Blanchard, Patrick J. Blanchard, Michelle G. Krohmer, and Nicole N. Krohmer. In addition, he is survived by foster children, Shirley Rebe and Jay Fowler.

Ned Snyder, Jr., B.A. Chemistry 1938, M.D. 1942 ~ died October 11, 2001. He was 84. His wife, Beverly, predeceased him.

John Karl Somerville died November 7, 2001 at the age of 74. John moved his family to Austin in 1963 to accept a position with the UT-Austin Department of Chemistry, where he constructed intricate apparatus for science faculty until his retirement in 1989. His first wife, Margaret Jean Macalister, preceded him in death. Surviving children are Pamela and Robert Stephenson, Sandra and Kevin Marauder, Rick and Patsy Somerville, Brenda Somerville, and Gregory Somerville. Wife, Saxon Fox and her sons survive him.

Michael Bailey Stone, B.S. Chemistry 1961 ~ passed away September 17, 2001 at the age of 62. He was associated with and owner of Technical Products II, Inc. since 1975. He is survived by his wife of 36 years, Jeanne, and daughters Laurie Leigh Workman (Jeff) and Kerri Lynn Veracruz (Richard), and grandson Dylan Bailey Veracruz.

Walter Walthall, M.D., B.A. Chemistry 1935 ~ died June 18, 2001 at the age of 88. He is survived by his wife, Alice Brady Walthall; his children, Sally (Thomas) Cribbs and Walter (Carolyn) Walthall III; his grandchildren; and his siblings and their spouses, Mr. & Mrs. James Dubose Walthall, Rev. and Mrs. Edwin Walthall, and Mrs. Thomas J. Walthall.

Reminiscences

Daniel W. Fults

Daniel W. Fults, III (D.O.B. 8/22/1953)

Hometown: Houston, TX B.S. Chemistry with honors (1975) – The University of Texas at Austin M.D. (1979) – University of Texas Southwestern Medical School, Dallas, TX Neurosurgery residency (1979-1985) – Bowman Gray School of Medicine of Wake Forest University, Winston-Salem, NC Research fellowship in molecular biology (1985-1985) – Department of Biochemistry, University of North Carolina, Chapel Hill, NC Faculty positions: Department of Neurosurgery, University of Utah School of Medicine, Salt Lake City, UT Assistant Professor (1987-1993); Associate Professor (1993-2000); Professor (2000- present).

Confessions of a Medical Doctor: When Chemistry Majors Go Bad

When I read of the death of Professor Bill Gardiner in the fall edition of Chemical Compositions I was taken by feelings of both sadness for the loss of a great teacher and nostalgia for my days as a chemistry major at UT-Austin. I took Dr. Gardiner's physical chemistry course (CH353, Kinetics and Thermodynamics) in the spring semester of 1974. I distinctly remember his response to one student's complaint about the difficult task of finishing Dr. Gardiner's examinations within the allotted time. After fixing that ego-melting LOOK upon the student, the Professor replied with a terse comment that was, at once, a reprimand and a valuable lesson. "In life," he said, "there is a premium on speed."

Thinking back, I realize that my undergraduate work in the Chemistry Department at UT taught me many valuable lessons that have served me well throughout my life and my professional career. The curriculum was rigorous, both physically and intellectually. I remember toiling in front of burette on the lower floor of Welch Hall, peering upward through the narrow windows to street level. There, I could see the feet of business students strolling by in early afternoon on their way home. Such leisure was denied the students of Professor Allen J. Bard's analytical chemistry course (CH455). We remained at our benches, often until twilight, returning home only after we had calculated the half-wave potentials and electrolyte concentrations from our polarograhy experiments.

There was strong emphasis on mathematics and computer science in the UT chemistry curriculum. I suspect this reflected the influence of F. A. Matsen, a chemist who could go toe-to-toe with any mathematician or physicist. Staying afloat in physical and inorganic chemistry classes required not only proficiency in differential and integral calculus, but also a grasp of some pretty heavy stuff, like group theory and tensor analysis. I am not old enough to have used a slide rule in college (I left mine at home after high school). However, I must admit to key-punching sizeable stacks of data cards just to run simple programs on the campus mainframe computer.

For me, academic enthusiasm ran highest for quantum chemistry. I was enthralled by the chalkboard wizardry of Professor Robert E. Wyatt. With colored chalk he could draw multidimensional, vector space diagrams that appeared to come right out of the board. On numerous occasions I prevailed upon Dr. Wyatt during his office hours to detail some point about quantum mechanics. His thinking and teaching were so clear that he could take the explanation deeper and deeper until eiher he reached a basic axium or I said, "Stop, I believe you!"

During my senior year I worked on a research project in synthetic organic chemistry with Dr. James Whitesell. Often I prowled the 'chemical graveyard" on the top floor of the chemistry building to procure some toxic compound that even off-shore chemical companies were unwilling to produce. I am convinced that any future plans to demolish Welch Hall will be blocked by the Environmental Protection Agency for fear of releasing those compounds remaining up there in that graveyard.

After my graduation in the summer of 1975 I entered medical school at UT Southwestern in Dallas. I recall pleading with Dr. Whitesell to write me a letter of recommendation. He felt I had betrayed my chemistry training by crossing over to study medicine. On the contrary, my career in academic medicine has always been driven by my interest in chemistry.

I am now Professor of Neurosurgery at the University of Utah where, for the past 14 years, I have run a research program in the molecular biology of brain tumors. Not surprisingly, my research keeps bringing me

back to basic chemistry. We know that brain tumors, like other human cancers, arise by mutations in genes that regulate cell growth. Many of these genes encode enzymes that catalyze phosphorylation reactions inside the cell. For malignant brain tumors, conventional medical and surgical treatments are often palliative, at best. I remained convinced that hope for improving patient treatment will come from basic research directed at understanding the biochemistry of altered cell growth in the nervous system.

I still find it inconceivable that the principles NMR, which chemists utilized in the 1950s to decipher the molecular structure of pure compounds in solution, could be exploited to generate anatomic images of whole organs inside the body. In fact, NMR spectroscopy is now being used as a research tool to analyze real-time chemical reactions inside the brain. These reactions range from simple glucose metabolism to complex
neurotransmitter-receptor interactions.

Looking back through the mists of time to my days in the Texas hill country, I see that my undergraduate chemistry training at UT put me on a solid intellectual footing. A rigorous approach to understanding nature by solving hard problems has served me well, no only in my clinical practice as a neurosurgeon, but also in my brain tumor research. Regrettably, I have not yet found a medical application for polarography.

—Dan Fults, M.D.

News from the Mallet Library

Transitioning to the Digital Library, Part 2: Year One of SciFinder Scholar

David Flaxbart

UT-Austin has now had access to SciFinder Scholar for more than one full year. SciFinder Scholar, the point-and-click interface to the Chemical Abstracts suite of databases, was licensed by the UT System in the summer of 2000, after several years of negotiations with Chemical Abstracts Service. Eight UT campuses are currently participating in the shared access license.

Austin's use of SciFinder Scholar in the first year has been very heavy. Over 800 copies of the client software were downloaded between November 2000 and August 2001. Searching activity rose steadily throughout the year, and Austin users now average over 6,000 searches per month on the system, logging over 56,000 searches during the year. This new access to Chemical Abstracts and its associated compound and reaction files has made searching the vast chemical literature much easier for students and researchers. The easy-to-use interface allows chemists to search for chemical structures and substructures, reactions, authors and inventors, and keywords, and analyze the results with powerful filtering tools. CAS has extended the bibliographic data back another twenty years, to 1947, and has plans to extend all the way back to 1907. Many recent SciFinder records have direct links to the fulltext of articles and patents on the Web, making the path from query to document much shorter.

In only a year SciFinder Scholar has already become an indispensable "discovery" tool for UT chemists. And even though many users can now seek and obtain new chemical literature without having to come into the actual library, the library remains the key player in the campus information infrastructure as it negotiates, pays for, and maintains a rapidly expanding web of electronic resources that scientists depend on every day.

Keep up with the latest news in chemical information at the Mallet Library web site, http://www.lib.utexas.edu/chem/. We welcome questions and input from alumni!

—David Flaxbart

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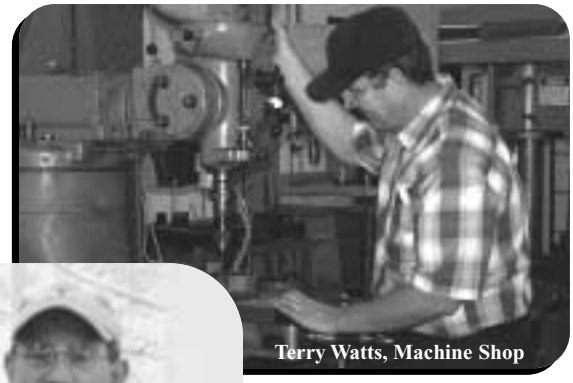

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