

# the Test Tube

Newsletter 1991 (#12)

THE DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY  
Texas Tech University Lubbock, Texas

Editor: Richard A. Bartsch

## To Our Readers:

Trying to collect my thoughts for the chairman's opening remarks for our newsletter has been a most pleasant experience, as the past 18 months have been a very successful period for the department. Three excellent new faculty members have joined us. Dr. Patricia Metz has just completed a most productive year in charge of our growing General Chemistry Program and has brought a new sense of excitement to this important aspect of our instructional efforts. Even in the short space of 12 months, Dr. Dennis Shelly, our second new faculty member, has contributed significantly to our already strong research program in analytical chemistry. This fall Dr. Kiumars Ghowshi joins the departmental faculty as another new member of the Analytical Chemistry Division. The growing research productivity and reputation of the department contributed to a record number of research grants, totaling in excess of \$2.5 million, being awarded to departmental faculty during the 1990-1991 academic year. These awards included five from the Texas Advanced Research and Advanced Technology Programs, the most for any department at Texas Tech. These impressive research accomplishments have been accompanied by significant advances in our instructional programs. Of note were the complete revision of the undergraduate biochemistry laboratories with help from a major grant from the National Science Foundation, the introduction of a new general chemistry course for non-majors and the development of instructional software for tutorial use. The significant accomplishments for the department in both teaching and research make it particularly fitting that departmental faculty members won both the highest awards for research (Dr. Dasgupta) and teaching (Dr. Walkup) bestowed by Texas Tech in 1991. As our department has also stressed service to the community and the profession, we are particularly proud that two other departmental faculty members were



*Alchemical symbols above the arches of North Wing of the Chemistry Building.  
(Photo by Artie Limmer)*

chosen for the highest award given by Texas Tech for distinguished contributions in the three areas of research, teaching, and service. Dr. Bartsch received the 1990 President's Academic Achievement Award and Dr. Shine was awarded the 1991 President's Academic Achievement Award. All

alumni and supporters of the department should be very proud of these achievements, but also be aware that continued success requires resources. Please contribute as generously as possible to our scholarship and research efforts.  
David B. Knaff, Chairman

## Meet Our New Faculty

We are pleased to introduce three new faculty members. Tricia Metz and Dennis Shelly joined the departmental faculty in the fall of 1990 and Kiumars Ghowsi will assume his faculty position this fall.

**Dr. Patricia A. Metz**, assistant professor, was born in Eagles, Pennsylvania. She was awarded a Bachelors of Arts with Honors in Chemistry from Washington and Jefferson College in 1974. After receiving her Master of Science in Chemistry from Duquesne University in 1979, she joined the faculty of the Department of Chemistry at Indiana University of Pennsylvania.

In 1984, she undertook further formal training in the field of chemical education by entering the doctoral program in the Department of Chemistry of Purdue University. In this doctoral work, she took the regular graduate coursework but her research was conducted in chemical education. In 1987, she received a Doctor of Philosophy in Chemical Education from Purdue.

Dr. Metz was then appointed as an Assistant Professor at the University of Delaware with the responsibility for general chemistry instruction in the Honors Program. In this position her efforts received very strong reviews from faculty and students alike. In 1989, we saw that she possessed just the qualifications of organization and expertise in chemical education that we were looking for in a Coordinator of General Chemistry and we were very pleased when she accepted the offer to become a member of our department.

Dr. Metz's research interests are in the teaching and learning of chemistry. Her research focuses on learning theory, problem solving, instructional methods and instructional design as it applies to chemistry. She is currently investigating how chemistry professors, chemistry graduate students and first-year college chemistry students solve non-algorithmic general chemistry problems and how the think-aloud interview protocol affects a subject's ability to solve problems. Her expertise in the field of chemical education has been recognized during the past year by appointments to the Task Force on



*Dr. Patricia A. Metz*

General Chemistry of the Division of Chemical Education of the American Chemical Society and to the American Chemical Society's General Chemistry Test-Construction Committee.

Within a period of a few months, Dr. Metz has revitalized the General Chemistry Program. The quality of the educational experience for the two thousand undergraduate students who take general chemistry lecture and laboratory courses each semester has never been better.

**Dr Dennis C. Shelly**, assistant professor, is a native of Chambersburg, Pennsylvania. He attended Huntington College in Indiana and received a Bachelor of Science in Chemistry from that institution of 1977. He majored in analytical chemistry for his doctoral



*Dr. Dennis C. Shelly*

studies at Texas A & M University and was awarded a Ph.D. in 1984.

Dr. Shelly spent one year as a Senior Analytical Chemist with Eli Lilly & Company in Indianapolis followed by one and one half years as a postdoctoral fellow at Indiana University. In 1984, he accepted a position as an assistant professor in the Department of Chemistry at Stevens Institute of Technology in Hoboken, NJ. In the fall of 1990, he joined our faculty and already has assembled a large team of graduate student coworkers.

Dr. Shelly's research interests include studies of mass transport in all types of microanalytical separation techniques and the development of new bioanalytical instrumentation, particularly biosensors and bioseparations.

Microanalytical separation techniques encompass a wide range of instrumental methods, designed to perform high resolution separations with sufficient concentration enhancement to allow trace-level determinations. Mass transport in packed capillary liquid chromatography is being studied with regard to the formation of the chromatographic bed. A "unified" approach to slurry packing has been developed, where many unknown variables are defined. The result has been improved reproducibility in the preparation of miniature, packed columns. Mass transport during solute transfer in column-planar chromatography has been examined. Other studies of mass transport are directed to micellar electrokinetic capillary chromatography and capillary isotachopheresis. For both methods,

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## Editor's Note

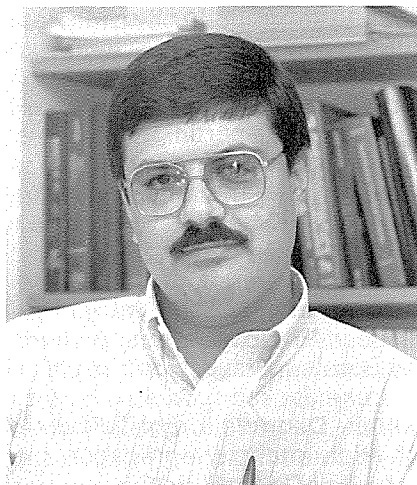
Having now wrestled with the assembling of Newsletter 12, I can only wonder how Henry Shine managed to put out each issue so effortlessly. My initial intention was to have this issue ready to go in June. Unfortunately, I missed that timing by a wide margin. Anyway, Newsletter 12 has now been completed and is in your hands. I hope that you enjoy reading about the activities and developments in the Department of Chemistry and Biochemistry. Thanks again to everyone who provided information, and in some cases articles, for this issue. We can always use more news from alums. Please let us hear from you.

Dick Bartsch

“on-column” and “whole-column” detection techniques are used to probe mass transport phenomena with direct measurements.

Bioanalytical instrumentation, especially luminescence biosensors and bioseparations, are the second major focus area. Recently, Dr. Shelly developed a single fiber, bioluminescence optrode and a sensitive detection system capable of both bioluminescence and fluorescence optrode measurements. He is currently working to optimize sensor design and extend its measurement capabilities to analytes other than ATP through coupled enzyme reactions. Efforts to interface miniature columns with planar separation techniques, a combination that has great utility for bioanalysis, have been successful. An example is the rapid amino acid profiling of peptides. The planar medium can be used for solute storage, chemical reactions and separations, all of which are very effectively incorporated in bioassay procedures. The possibility, therefore, exists for rapid bioactivity determinations of solutes, isolated with high resolution column chromatography. Dr. Shelly is also working on an integrated instrumental technique for rapidly identifying airborne biological contaminants. The work in this area will focus on sampling technology and data analysis.

**Dr. Kiumars Ghowsi**, assistant professor, was born in Iran. His undergraduate studies were taken at Louisiana State University and he was awarded a Bachelor of Science in Electrical Engineering in 1982. He remained at LSU for his graduate work and received a Master of



Dr. Kiumars Ghowsi

Science in Electrical Engineering with a minor in chemistry in 1984. He then transferred to the Department of Chemistry with an analytical chemistry major for his doctoral studies and received a Ph.D. in Chemistry from LSU in late 1990. He joins the TTU faculty for the fall semester of 1991.

Dr. Ghowsi is interested in fundamental and applied research on insulator electrochemistry, liquid state, interfacial phenomena, dielectric and electronic properties of biological molecules and capillary electrophoretic separations.

Field effect electroosmosis is a novel interfacial phenomena which is of particular interest. The field effect can be demonstrated by combining a metal-insulator-electrolyte system (MIE) with capillary electroosmosis. Using this technique, a capillary is covered with a metallic coating at its outside surface and electroosmotic flow is controlled by applying a perpendicular electric field to the

flow. The field effect streaming potential can be defined as the converse of field effect electroosmosis. An electric potential is generated across the capillary with the metallic coating and applied electric field perpendicular to the flow, if a liquid is forced through the capillary.

The potential applications of these effects are to be examined in processes which would benefit from a flexible control of electroosmotic flow, such as capillary electrophoresis in separation science, and processes with continuous flow electrophoresis where there is a need for elimination of the electroosmotic flow which reduces the effectiveness of these processes. The effects will also be exploited for the characterization of insulator/electrolyte interfaces and possibly for energy conversion.

Based on field effect electroosmosis, the physical modeling of a field effect electrokinetic transistor called a MIEKFED (metal-insulator-electrolyte-electrokinetic field-effect device) has been proposed. This device would be considered the liquid state equivalent of conventional solid state metal oxide semiconductor-field effect transistor (MOSFET) in electronics. In a MIEKFED, the electrolyte flow and ionic current may be controlled, while in a MOSFET, the electronic current flow may be controlled, in either case, by means of an electric field applied perpendicular to their respective flow. This MIEKFED has great potential for miniaturization, particularly in light of recent advances in the technology for micromachining of silicon.

## Computer Workstation for Molecular Modeling

During the summer of 1991, the Department of Chemistry and Biochemistry purchased an advanced graphics computer for molecular modeling. This Silicon Graphics Personal Iris 4D-35 computer is one of the latest generation of high performance RISC workstations. Equipped with “Turbo Graphics” hardware, it allows for the rapid display of the three-dimensional structures of molecules. Following two special

topics graduate courses on computational chemistry, a theoretical one by Dr. Birney in Spring Semester, 1991, and a practical one by Tech-Ex Dr. Don Kyle (Ph.D. '87 and now an employee of Nova Pharmaceuticals in Baltimore) during the summer, several graduate students have begun to utilize molecular modeling as an important part of their research effort. Current biochemical projects include viewing the complex three-dimensional structures of enzymes to investigate the effects of site-directed

mutagenesis on the structure and binding properties of proteins. The workstation is being used by organic chemists to study preferred conformations of crown ethers and synthetic intermediates and to probe potential binding interactions between molecules. Physical and inorganic chemists are employing the workstation to perform semi-empirical and *ab initio* calculations of electronic structures to complement the results of their experimental research.

## Welch Summer Scholars Program

In an effort to encourage more students to select chemistry as their field of study, the Robert A. Welch Foundation has established summer programs for outstanding Texas high school students (mostly entering their senior year) at three locations (Texas Tech University, University of Texas at Austin, and the University of Houston). From hundreds of applications, fewer than 20 students are selected per site for a two-week program of chemical education and research. The Robert A. Welch Foundation provides full room and board for the participants as well as financial assistance to the host department at the site. This year's Welch Summer Scholars Program at Texas Tech was held in June under the direction of Dr. Patricia Metz. In this superbly-organized program, the 14 participants attended lectures and instructional laboratories during most morning sessions. For most afternoons, each student worked in the laboratory of a faculty member on a research project. For many of the students this was their first acquaintance with chemical research and showed them the excitement of such activities. It was

a stimulating program for the participants and the department owes a big vote of thanks of Tricia for the tremendous effort that she expended. Student participants, their high schools and home towns, their research mentors and research projects are listed below.

Marc Bhogte, Mary Carrol High School, Corpus Christi, Dr. Knaff - Roles of Ferredoxin and Nitrate Reductase in Photosynthesis.

Carey Bresler, Brazoswood High School, Lake Jackson, Dr. Casadonte - Degradation of Toluene through High Intensity Sonication.

Christopher Connell, Jesuit College Prep School, Garland, Dr. Wilde - Qualitative Analysis and Extractive Metallurgy of Precious Metal Containing Ore Samples.

Robert Daniels, Boyd High School, Decatur, Dr. Marx - Synthesis and Attempted Formylation of Ethyl 4-Nitrophenyl Acetate.

Meridith Esterline, West Brook Senior High School, Beaumont, Dr. Wilde - Quantitative Analysis of the Noble Metals in Ore Samples through Colorimetric Determination.

Stephen Froehlich, Westlake High School, Austin, Dr. Bartsch - Jones Oxidation of *sym*-Hydroxydibenzo-16-crown-5 to *sym*-Ketodibenzo-16-crown-5.

Benjamin Grieser, Martin High School, Arlington, Dr. Marx - Studies Toward the Synthesis of Cyclohexadienones.

James Koh, West Brook Senior High School, Beaumont, Dr. Shelly - Stress Indication with Cames Particles.

Tony Lin, Westwood High School, Austin, Dr. Nakashima - Detection of Restriction Fragment Length Polymorphisms in Rat Hepatoma Cells Probed with a Hexokinase cDNA.

Jonathan Price, Nimitz High School, Irving, Dr. Nakashima - Restriction Fragment Length Polymorphism.

Vinay Pulim, LBJ Science Academy, Austin, Dr. Birney - Ab initio Calculation of the Properties of 3-AZA-4H-pyran-4-one.

Helen Wei, Clear Lake High School, Houston, Dr. Shaw - Beta-Lactamase Production and Reconstitution.

May Yin, Robert E. Lee High School, Tyler, Dr. Quitevis - A Study of Nonradiative Rates of MC540 in Some Alcohols.

Joseph Yu, Westlake High School, Austin, Dr. Headley - Determination and Prediction of the pK<sub>a</sub>'s of Substituted Acetic Acids in Aqueous Solution.

## Clark Scholar's Program

During the summer of 1991, Texas Tech University hosted an eight-week research program for 22 juniors and seniors from high schools across the nation. The program was sponsored by the Clark Foundation of Dallas and is known as the Clark Scholars Program. The student participants were engaged in research with faculty members and graduate students in several Tech departments. The five Clark Scholars who conducted research in the Department of Chemistry and Biochemistry and their research areas and faculty mentors were: Michele Hareland from Albuquerque, NM, biochemistry with Dr. Harman; Hoang Pham from Converse, TX, biochemistry with Dr. Knaff; Kyle Sechrist from Lubbock, TX, analytical chemistry with Dr. Dasgupta; Thomas Smith from Natchitoches, LA, biochemistry with Dr. Shaw; and Alex Wang from Columbus, GA, organic chemistry with Dr. Bartsch.



*Dr. Henry Shine (right) and Dr. Norman Hackerman, Chairman of the Scientific Advisory Board for the Robert A. Welch Foundation, discuss the status of chemical research in the State of Texas during a visit of Welch Foundation personnel to Texas Tech.*

## Faculty Development Leaves

From time-to-time it is highly beneficial for a faculty member to take a break and spend some time at another location developing new teaching and/or research skills. Although most states have a formalized policy under which a faculty member is afforded a sabbatical leave of one semester at full pay or two semesters at half pay for every seven years of service, this is not the case in the State of Texas which does not include a faculty sabbatical leave program in its budget. However, Texas Tech University does make available 10-15 "faculty development leaves" each year for distribution among the nearly 1000 full-time faculty members. Within the past two years, three faculty members from the Department of Chemistry and Biochemistry have been awarded one-semester faculty development leaves. Here's what they did.

Dr. Robert Holwerda was awarded a faculty development leave for Fall Semester 1989. As a Visiting Research Associate in the Department of Chemistry at the California Institute of Technology, he carried out cyclic voltammetric, coulometric and double potential

step chronocoulometric studies of oxo-bridged chromium (III) complexes in the laboratory of Dr. Fred Anson. In related studies, the X-ray crystal structure of  $\mu$ -oxo- $\mu$ -acetabis[tris(2-pyridylmethyl)-aminechromium (III)] perchlorate was solved. Dr. Holwerda also began the programming of an interactive Macintosh computer tutorial, ChemTutor, for general chemistry students. After returning to Texas Tech, he completed the tutorial which covers all topics taught in our CHEM 1307, 1308 quantitative general chemistry sequence. The tutorial is so good that McGraw-Hill will publish it as a commercial software package in the fall of 1991.

Dr. David Knaff combined other support for the summer with a faculty development leave for Fall Semester 1989 to allow him to spend June-December in Zürich, Switzerland. His time was divided between the Biochemical Institute and the Institute for Microbiology of the University of Zürich. At the former working in collaboration with Dr. Hans Bosshard, he was involved in developing new techniques for the chemical modification of carboxyl and amino groups on proteins and using these techniques to identify interaction domains

involved in protein:protein complex formation between plant enzymes. Dr. Knaff's work in microbiology involved studies on the molecular biology of photosynthetic bacterium and he also taught a seminar course on bacterial transport mechanism for advanced undergraduate students. (Incidentally, this leave kept Dr. Knaff from assuming the departmental chairmanship until January of 1990. Why would anyone rather spend a semester in Switzerland doing research than in Lubbock handling the slings and arrows of the chairman's job?)

For Spring Semester, 1991, Dr. Edward Quitevis was on a faculty development leave in the Department of Chemistry at Stanford University. His host during the leave was Dr. Michael Fayer. Dr. Quitevis spent the semester learning the theory and techniques of nonlinear laser spectroscopy. In particular, he focused on optical dephasing and the photon-echo technique. He plans to apply this technique to his research on the optical dynamics of molecular aggregates at Texas Tech. During the leave, he also gained an interest in protein dynamics and plans to initiate a research program to study proteins using this newly acquired methodology.

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## Bartsch Selected for NSF-ACF Polymer Chemistry Workshop

Dr. Richard A. Bartsch was one of 29 faculty members from U.S. colleges and universities selected to participate in a two-week workshop on "Teaching Macromolecular Chemistry and Engineering in the Undergraduate Curriculum" which was held at Virginia Tech in July of 1991. The workshop, offered for the first time this year, was jointly sponsored by the National Science Foundation and the American Chemical Society. Up to 60 percent of industrial chemists and engineers work with polymers, yet only three percent of the faculty in chemistry departments and 17 percent of the faculty in chemical engineering departments are involved with teaching and/or research in macromolecular science. Dr.

Bartsch received a wealth of information about incorporating topics on polymer chemistry into existing undergraduate courses at all levels and will serve as a departmental resource person for other faculty members. He is also proposing the introduction of senior-level/advanced graduate student lecture and laboratory courses in polymer chemistry for the department. Dr. Bartsch also attended the First NICHE Conference on Future Directions in Polymer Science and Technology which was held in Keystone, CO, in May of 1990. The NICHE Conference was sponsored by the Council for Chemical Research.

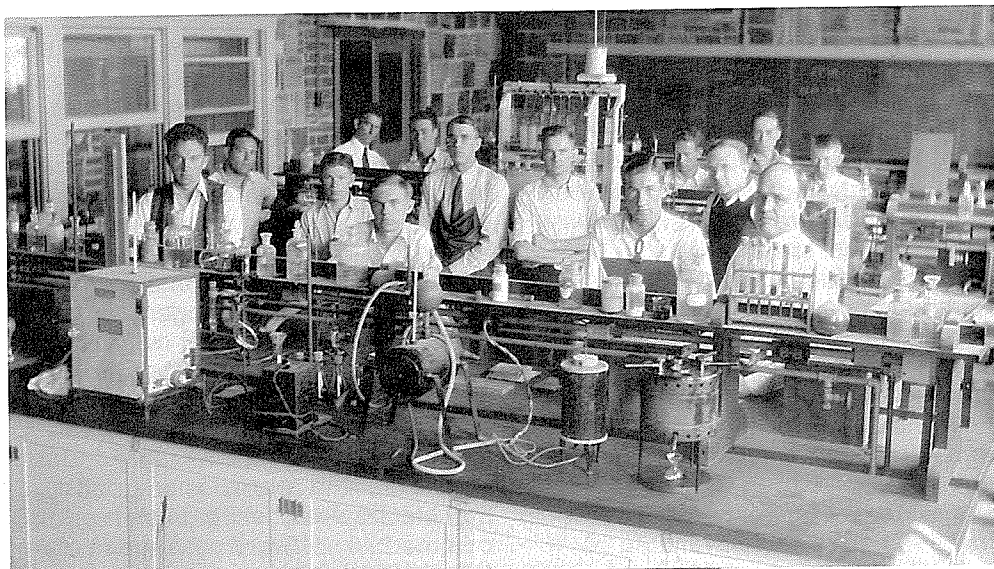
## Microscale Laboratories for General Chemistry

Although the use of microscale laboratory experiments in the undergraduate organic chemistry laboratory is sweeping the national (we converted to microscale two years ago), it is rather surprising that laboratory coordinators for general chemistry have been slow to jump on the microscale bandwagon. Advantages of microscale experiments are greatly reduced cost of chemicals and waste disposal, quicker experiments with less time spent cleaning equipment, and increased safety. Due to the large enrollments in general chemistry laboratory, practical introduction of microscale experiments requires inexpensive equipment. Fortunately a large number of microscale experiments can be performed with two basic types of relatively inexpensive plastic apparatus: pipets and well plates.

Polyethylene plastic pipets are commonly available in sizes of one to several milliliters at a cost of a few cents. These pipets can be used for everything from burets (by counting drops) to reaction vessels to spatulas. They can be easily heat-sealed to produce an air-tight storage container or a pressure vessel. The tips can be stretched and cut to yield a tip capable of reproducibly yielding drops smaller than 10-microliters.

Polystyrene cell wells (variously called immunoassay plates, tissue culture plates, cell culture cluster dishes, serology plates, microwell plates, as well as other names) are available in standard external dimensions of approximately 86 X 128 mm. The plates are available in a range of sizes containing from 96 wells (0.4 mL/well) to 6 wells (16.5 mL/well). The plates are available with U-shaped, V-shaped, or optically flat bottom-shaped wells. These plates can serve a variety of purposes from beakers to test tubes to cells for visible spectroscopy.

The first commercial laboratory manual, "Microscale Laboratory Manual for General Chemistry" by Dr. Jerry Mills and Dr. Michael Hampton (PhD '80, who is now on the faculty at the University of Central Florida) appeared in 1988. The experiments were all based on the use of the plastic pipets and well



*Those were the days! This photograph was taken in the Chemistry Building in 1936.*

## Automated Stockroom Handling for General and Organic Chemistry Laboratories

During the past year, we have instituted automated check-out of chemicals and apparatus from the stockrooms for the undergraduate general and organic chemistry labs. This advancement resulted from the efforts of Dr. Jerry Mills and his graduate student, David Harwell. Substantial innovation has been required and "ChemTrax", a chemical inventory software program for the Macintosh will be marketed by ACS Software.

The heart of the system is the database program Double-Helix and a bar-code reader from Videx. The bar-code reader looks like a small calculator and is surprisingly inexpensive. A corner of the device is run over the bar code and the data is stored in internal memory. Each student has an identity bar code which is fasten in their lab

plates. The manual was designed as a supplement to any existing laboratory manual, replacing perhaps up to 50% of the more conventional experiments. A second edition of this manual appeared this year as did "Microscale and Macroscale Experiments for General Chemistry" by J.L. Mills and M.D. Hampton which incorporates microscale and conventional scale experiments into the same manual.

In general, the student response to microscale experiments is very

favorable, varying, of course, with the particular experiment. Since the experiments are generally much quicker and require much less cleaning of equipment, students usually like them. Particularly popular are those experiments which use the plates in visual colorimetric experiments. Students enjoy the visual experience of determining color density by eye as opposed to the use of a spectrophotometer.

The next step will be to complete the automation of the research area of the stockroom, now that the system has proven its worth. Much of the data is already in the computer, but a faster and larger hard disk is needed. Soon, we hope to be able to access the entire stockroom inventory, as well as the material data safety sheets on chemicals from our office computers.

favorable, varying, of course, with the particular experiment. Since the experiments are generally much quicker and require much less cleaning of equipment, students usually like them. Particularly popular are those experiments which use the plates in visual colorimetric experiments. Students enjoy the visual experience of determining color density by eye as opposed to the use of a spectrophotometer.



*Texas Tech University faculty members recognized for outstanding teaching by Mortar Board and Omicron Delta Kappa during Faculty Recognition Week in 1990 are (left to right) Dr. Ronald Green (Animal Science), Sherry Sancibrian (Speech and Hearing Sciences), John White (Architecture), Dr. John Gilliam (Economics) and Dr. Robert Walkup (Chemistry and Biochemistry).*

## Faculty Receive Major TTU Awards

During the past 18 months, four departmental faculty members have been recognized by Texas Tech University.

Each year President's Academic Achievement Awards are made to two TTU faculty members for outstanding contributions in the three areas of teaching, research and service. **Dr. Richard A. Bartsch** and **Dr. Henry J. Shine** received President's Academic Achievement Awards in 1990 and 1991, respectively. Each award was presented by the President of Texas Tech University at the Spring Faculty Convocation and consisted of a TTU medallion and a check.

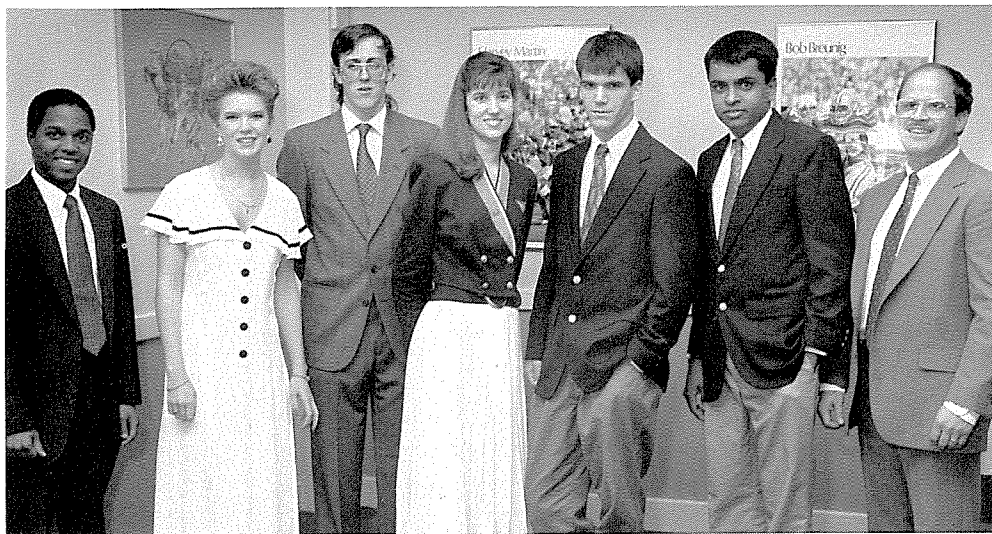
The extraordinary contributions of **Dr. Robert D. Walkup** in chemistry teaching were recognized three times. He was one of the five TTU faculty members honored as a 1990 Outstanding Faculty Member by Mortar Board and Omicron Delta

Kappa Honor Society during their Faculty Recognition Week. Also he received the 1990 Distinguished Professor Award from AED Premedical Honor Society. Each year the instructional excellence of two faculty members from the College of Arts and Sciences is recognized at the Spring Faculty Convocation by the President's Excellence in Teaching Award. In 1991, Bob Walkup received this award from President Lawless, consisting of a TTU medallion and a check.

The most prestigious research award at Texas Tech University is the Barney E. Rushing, Jr., Faculty Distinguished Research Award from the Texas Tech Dads and Moms Association. The competition for this award is campus-wide and exceptionally keen. **Dr. Purnendu K. (Sandy) Dasgupta** was recognized with this award and presented with a check at the Dads and Moms Association Annual Meeting in Lubbock in February, 1991.

## First Song Prize Awarded

When Professor Pill Soon Song left our department in 1987 after serving as a faculty member for 20 years, he made a donation of \$4,000 to establish the Song Prize. This prize is to be awarded to the person who submits the best doctoral dissertation in the Department of Chemistry and Biochemistry in a given calendar year. After waiting for a few years for the interest to accumulate, a competition for the first Song Prize was held among the doctoral dissertations from the Department of Chemistry and Biochemistry which were submitted to the Graduate School in 1990. Each of the five divisions was asked to select the best dissertation from among its graduates and then the best dissertations from each division were evaluated by a departmental committee. The recipient of the first Song Prize of \$500 was Dr. Robert R. Kane, who majored in organic chemistry and conducted his dissertation research under the supervision of Dr. Robert Walkup.



Hoechst Celanese employees Alphonse Walker (BS '90) and Mark Seidlitz (MS '90) (far left and far right, respectively) award Hoechst Celanese Scholarships for 1991-1992 to (left to right) Tracy Bryans, Andrew Simmons, Stacy Clinton, Dustin McMinn, and Anant Patel.



Chairman David Knaff (center) poses with the Jeanette and Joe Dennis Scholarship recipients for 1991-1992. From left to right, Jolanda Wimmer, Brad Bentley, Amy Arrant, Kathryn Mitchell, Clinton Murray, and Tori Irlbe.



## Undergraduate Scholarship for 1990-1991

We are very pleased to acknowledge the donation of scholarship funds by Dow U.S.A., Hoechst Celanese, Pennzoil, and Phillips Petroleum which allow us to recognize the accomplishments of our undergraduates. Also important is the endowment by Dr. and Mrs. Joe Dennis, the earnings from which provide the Jeanette and Joe Dennis Scholarships. The following undergraduate scholarships were presented at the 1990 Awards Banquet and were in effect for the 1990-1991 academic year.

### Jeanette and Joe Dennis Scholarships

Joe Johnston  
Cynthia Evans Keith  
Kathryn Peterson  
Jolanda Wimmer

### Dow U.S.A. Scholarships

Katherine Biediger  
David Blann  
Tracy Bryans  
Robert Hogan  
Tori Irlbeck  
Sean Kennedy  
Katherine Lebeda  
Brian Livengood  
Joe Martin  
Pei-Pei Tang

### Hoechst Celanese Scholarships

Bradley Bentley  
Peter Brown  
Stacy Clinton  
Dustin McMinn  
Clinton Murray  
Aaron Odom  
Andrew Simmons  
Patrick Ward  
Joseph Wimmer

### Pennzoil Scholarships

Amy Arrant  
Christine Self

### Phillips Petroleum Scholarships

Vipin Menon  
Richard Muyschondt

Dr. David Babb (BS '82, PhD '85) from Dow U.S.A. in Freeport presents the Dow U.S.A. Scholarships for 1991-1992 to (left to right) Brian Livengood, Robert Hogan, Kim Smith, Pei-Pei Tang, Peter Brown and Sheilendra Mehta.



*Dr. Richard Redington (left) and Chairman David Knaff (right) discuss some fine points of quantum theory with Richard Muyshondt, the first recipient of the Walter J. Chesnavich Memorial Scholarship.*



*Chairman David Knaff congratulates Joel Pratt at the 1991 Awards Banquet. Joel received the Samuel Hunt Lee memorial Award (outstanding freshman) and the CRC Press Freshman Achievement Award.*

## New Grants to Faculty

**Dr. John Anderson, James Harman, Richard Nakashima, and Robert Shaw** received from the Instrumentation and Laboratory Improvement Program of the National Science Foundation an award of \$65,100 for "A Unified, Single System Approach to Undergraduate Biochemistry Training." This grant was matched by \$65,100 from Texas Tech and provided the instrumentation for a total revision and modernization of the instructional biochemistry laboratories for majors. In the new laboratories, students obtain an understanding of the fundamental techniques of protein chemistry, the fundamental techniques in recombinant DNA research, and the use of computers as an integral part of biochemical experimentation through the in-depth exploration of a single biological system, the complex II (succinate: ubiquinone oxidoreductase) of *Escherichia coli*.

**Dr. Richard Bartsch** received a \$11,000 supplement to his Texas Higher Education Coordinating Board—Advanced Technology Program grant on "Synthetic Ionomer Membranes" to support the participation of minority undergraduate student Derrick McGowen in the project. Dr. Bartsch has been awarded grants of \$53,800 and \$64,300 by Los Alamos National Laboratory for the preparation of "Reagents for Actinide Extraction" during the periods of June 1990-May 1991 and June 1991-May 1992, respectively. His grant from the Department of Energy for studies of "Metal Ion Complexation by Proton-ionizable Crown Ethers" was continued with an allocation of \$89,300 for the 1991 calendar year.

**Dr. David Birney** was awarded \$21,000 for a two-year period on a Petroleum Research Fund Type G grant to investigate "A Molecular Scaffold for the Study of Binding in Molecular Recognition." Dr. Birney also received

an award of 50 hours of supercomputing time at the Pittsburgh Supercomputing Center for "Structural and Vibrational Studies of Reactants and Transition States."

**Dr. Dominick Casadonte** received a two-year, \$18,000 Petroleum Research Fund Type G grant, which began in September, 1990, for "Photonic Studies in Fractal Domains: Photoactive Supramolecules and Metallogels. For the investigation of "Variable Frequency Sonochemistry," Dr. Casadonte was awarded a \$90,000, three-year grant by the Robert A. Welch Foundation.

**Dr. Purnendu (Sandy) Dasgupta** was awarded a two-year grant of \$213,000 from the Environmental Protection Agency to develop a "Continuous Monitor for the Measurement of Aerosol Acidity." Research support from Dionex Corporation and Shell Development Company continues at about the same rate as in previous years. Dr. Dasgupta received a \$30,000 unrestricted grant for the 1991 calendar year from EG&G Chandler Engineering for research on moisture sensors. He also has a three-year, \$358,800 grant from the Environmental Protection Agency for "Wet Effluent Denuder Coupled Liquid Ion Chromatography Systems (WEDCLICS): A Versatile Technique for the Analysis of Atmospheric Trace Gases" which began in August, 1990.

**Dr. Allan Headley** received a one-year grant of \$12,000 from the National Science Foundation to investigate "Substituent and Solvent Effects on Proton Transfer Reactions."

**Dr. Robert Holwerda** was awarded a three-year, \$90,000 renewal grant from the Robert A. Welch Foundation for "Reactivity Studies of Transition Metal Ions." Dr. Holwerda also has a new contract from Nutrition Service Associated to study "Chelation of Nutritional Trace Metals."

**Dr. David Knaff** received a three-year renewal grant of \$90,000 from the Robert A. Welch Foundation to probe

"Cytochrome: Reaction Center Interactions" which began in June, 1990. For almost the same period, he was awarded a \$240,250 grant from the Department of Energy to study "Interaction of Ferredoxin-Dependent Enzymes with Substrates."

**Dr. John Marx** received a three-year renewal grant of \$90,000 from the Robert A. Welch Foundation to investigate the "Total Synthesis of Biologically Active Terpenes."

**Dr. Jerry Mills** has been awarded grants of \$51,100 and \$60,700 by Los Alamos National Laboratories for "Synthesis of Tripod Organophosphorus Complexing Agents in Actinide Extraction" during the periods of June 1990-May 1991 and June 1990-May 1992.

**Welch Professor Wilse Robinson** received a one-year, \$77,000 grant from the National Science Foundation to investigate "The Role of Water and Other Solvents in Chemical Reactivity."

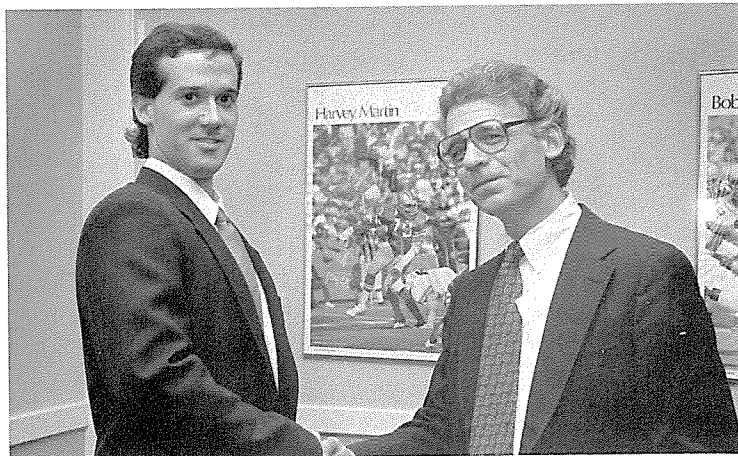
**Dr. Dennis Shelly** was awarded a two-year, \$143,000 SBIR Subcontract by the Office of Naval Research for "Development of an Optical Fiber Detection System for Calibration of Stress Tracer Sensors." This work will permit the continuous processing of plastic bonded explosives and propellants, making solid rocket motors more reliable and less expensive.

**Dr. Henry Shine** received a three-year renewal grant for \$90,000 from the Robert A. Welch Foundation to study "Radical and Cation Radical Reactions at Nitrogen Centers."

**Dr. Bruce Whittlesey** was awarded a two-year, \$116,000 grant in the Energy Research in Application Program of the Texas Higher Education Coordinating Board to study "New Methods for the Preparation of Copper Indium Diselenide." This was the only successful proposal of the many that were submitted by Texas Tech faculty members for this program.



Chairman David Knaff poses with Beth Laney, recipient of a Department of Chemistry and Biochemistry Teaching Assistant Award for 1991.



Chris Stetson is congratulated by Chairman David Knaff on receiving the Texas Tech University Outstanding Graduate Teaching Assistant Award for the Department of Chemistry and Biochemistry in 1991.

## Outstanding Teaching Assistant Awards

At the Spring Awards Banquet each year, two or more awards are made to graduate teaching assistants for their outstanding service in our undergraduate laboratories. Each year, the Texas Tech University Graduate School recognizes the top teaching assistant in the Department of Chemistry and Biochemistry with the Texas Tech University Outstanding Graduate Teaching

Award. Winners for 1990 and 1991 were David Harwell and Christopher Stetson, respectively. Additional recognition for instructional excellence is provided by one or more Department of Chemistry and Biochemistry Teaching Assistant Awards. In 1990, Joy Ittycheriah was the winner of this award. In 1991, the award went to Michelle Dose and Elizabeth Laney.

Congratulations to Beth, Chris, David, Joy and Michelle for providing high quality instruction to our undergraduates!

## Faculty Service on Review Panels

Departmental faculty members continue to be invited to serve on important national review panels. Dr. Anderson was a member of the National Science Foundation Review Panel for Instrumentation and Laboratory Improvement which met in Washington, DC, in early 1991. Also rendering service to the National Science Foundation was Dr. Holwerda as a member of the review panel which met in Washington, DC, in early 1991 to select the NSF Graduate Fellowship recipients. Drs. Bartsch and Dasgupta were participants for the Department of Energy's review of the chemistry programs of the Argonne National Laboratory and the Ames National Laboratory, respectively, in the fall of 1990. Dr. Bartsch also participated in the evaluation of applications for the 1990 NATO Postdoctoral Fellowship Program which was held in San Francisco in early 1990. Dr. Shine together with Tech President Lawless were invited participants in a government-university workshop on the management and organization of university research. The workshop was held at the National Academy of Sciences in Washington, DC, in May of 1990. Workshop sponsors were the National Academy of Sciences, the National Academy of Engineering, and the National Institute of Medicine. The workshop was chaired by Dr. Erich Bloch, the Director of the National Science Foundation.

## NSF Funds Biotechnology Instrumentation Facility

Texas Tech University has been awarded a \$227,200 grant from the National Science Foundation (NSF), including \$90,890 in matching funds from Texas Tech University, for the creation of a Biotechnology Instrumentation Facility. Members of the Biotechnology Institute from our department who were co-principal investigators on the application include Drs. Harman, Knaff and Nakashima. Dr. Nakashima was appointed as Faculty Coordinator of the facility which is located on the fourth floor of the Chemistry Building. He made site visits to Applied Biosystems, Incorporated in California and Milligen/Bioscience (a division of Millipore Corporation) in Massachusetts to evaluate their instrumentation and support

services. Competitive bidding resulted in the purchase of a Milligen/Bioscience Model 6625 automated protein synthesizer and a Cyclone Plus nucleic acid synthesizer. Since the Biotechnology Institute agreed to serve as a beta test site for the Model 6625, a new, top-of-the-line, solid-phase protein synthesizer, Milligen/Bioscience generously donated a new Model 9400 Excell automated peptide synthesizer which has a list price of about \$45,000. The facility will also include an FPLC protein purification system, a scanning laser densitometer, and a polymerase chain reaction apparatus for amplification of DNA. Acquisition of this equipment will enable researchers at Texas Tech to perform state-of-the-art research in biotechnology-related fields of biochemistry and molecular biology. Ms. Ida Schaefer is the operator for this core instrumentation facility.

## Undergraduate Degrees Awarded

The following students completed one of our four undergraduate programs (BS in Chemistry, BS in Biochemistry, BA in Chemistry, and BA in Biochemistry) and were awarded their degrees. In addition to completing the rigorous course of studies required of a biochemistry or chemistry major, several students graduated Cum Laude (GPA of 3.50-3.69), Magna Cum Laude (GPA of 3.70-3.89), and Summa Cum Laude (GPA of 3.90 and above).

### BACHELOR OF SCIENCE

*May, 1990*

Charles H. "Britt" Britton, III  
(Summa Cum Laude)-  
Biochemistry  
Lori Ann Herrmann (Cum Laude)-  
Biochemistry  
Huy Quang Pham (Magna Cum  
Laude)-Biochemistry  
Marcus Eugene Smith-Biochemistry  
Jon Bob Brown-Chemistry  
Kimberly Kay Cowan-Chemistry  
Robert Jason Levy-Chemistry  
Robert Lee Livengood (Cum  
Laude)-Chemistry  
Alfonse James Walker-Chemistry

*August, 1990*

Robert John Barren, III-  
Biochemistry  
Teddy Charles Scott, Jr.,-  
Biochemistry  
Melissa Dawn Wossum-  
Biochemistry  
Sammy Lane Cox-Chemistry  
Christopher S. Criezis-Chemistry  
Paul Stamatis-Chemistry  
Stefan Graham Williams-Chemistry

*December, 1990*

Andrew John Bessire-Chemistry  
Erin Elizabeth Fahrenkrog-  
Chemistry  
William Shane Goad-Chemistry

*May, 1991*

David Wayne Blann-Biochemistry  
Antionette Burse-Biochemistry  
Gilbert Lynn Danforth-Biochemistry  
Neiman Terrace Eaton-Chemistry  
Sean Patrick Kennedy-Chemistry  
Paul Anthony King-Chemistry  
Katherine Marie Lebeda (Magna  
Cum Laude)-Chemistry  
Joe Albert Martin (Magna Cum  
Laude)-Chemistry  
Vipin Menon-Biochemistry  
Elizabeth Rodriguez-Biochemistry

### BACHELOR OF ARTS

*May, 1990*

Joseph John Mogan (Cum Laude)-  
Biochemistry  
Karen LeAnn Rogers-Biochemistry  
Wayne Edward Fleitman (Cum  
Laude)-Chemistry  
Thanh Viet Tran-Chemistry

*August, 1990*

John Mark Bayouth-Biochemistry  
Randall Lester McDaniel-Chemistry

*December, 1990*

Tamara Hughes Fuentes-  
Biochemistry  
Arturo Alvarez, III-Chemistry  
Eddie Dieter Fischer-Chemistry

*May, 1991*

Stevenn Patrick Dunn-Chemistry  
Christopher Ray Kinnison-  
Biochemistry  
Cynthia Eileen Smith-Chemistry

## Graduate Degrees Awarded

During the 18-month reporting period for this newsletter, six Master of Science and 12 Doctor of Philosophy degrees in Chemistry were conferred.

### Master of Science

**Thomas Cain Clancy**, "Collision-induced Dissociation Dynamics", August, 1990 (Physical-Dr. Wilde)

**Cherryleen C. Garcia**, "Solvent Extraction-Flow Injection of Quaternary Ammonium Ion Through Ion-Pairing," May, 1991 (Analytical-Dr. Dasgupta)

**Zuang-Cong Lu**, "Macrocyclic Multidentate Ligands: Synthesis and Immobilization on Silica Gel," December, 1990 (Organic-Dr. Bartsch)

**Mark O. Seidlitz**, "The Chemistry of Copper (II) Complexes," May, 1990 (Inorganic-Dr. Holwerda)

**Louis W. Whaley**, "Synthesis of Cyclic and Acyclic Lipophilic Complexing Agents for Metal Ions," December, 1990 (Organic-Dr. Bartsch)

**Shihua Yao**, "Application of Picosecond Time-Correlated Single Photon Counting Technique to Acid-Base Problems in Chemistry," August, 1990 (Physical-Dr. Robinson)

### Doctor of Philosophy

**P. Douglas Boatman**, "Synthesis and Reactions of 4-Alkyl-delta-4-1, 3-oxathianes; A Model Study for the Total Synthesis of Oscillatoxin D," December, 1990 (Organic-Dr. Walkup)

**Kai-Tai Chang**, "The Cross-linking and Antibody Studies of Ferredoxin-dependent Enzymes," August, 1990 (Biochemistry-Dr. Knaff)

**William Stuart Edgemond**, "Progress Toward the Total Synthesis of Aplysistain and an Improved Synthesis of Hexacene," May, 1991 (Organic-Dr. Marx)

**Mi-Ja Goo**, "Crown Ether Compounds: Synthesis and Alkali-Metal Cation Complexation," May, 1991 (Organic-Dr. Bartsch)

**A.K.M. Mansurul Hoque**, "Cation Radical Induced Oxidative Chemistry of Hydrazones and Oximes," May, 1990 (Organic-Dr. Shine)

**Hae Kyung Lee**, "DNA Superhelical Density and CPR-Mediated *lac* Promoter Activation," May, 1991 (Biochemistry-Dr. Harman)

**Wang-Keun Lee**, "Radical and Radical Cation Chemistry of Azoalkanes and Oximes," May, 1990 (Organic-Dr. Shine)

**Robert Ronald Kane**, "The Synthesis and Free-Radical Reactions of 2-Chloroethyl Silyl Enol Ethers: A Synthesis of the Carbon-9 to Carbon-21 Subunit of the Aplysiatoxins and Oscillatoxins," December, 1990 (Organic-Dr. Walkup)

**Joseph Aloysius McDonough, III**, "Synthesis of Neutral and Proton-Ionizable Crown Ethers," May, 1990 (Organic-Dr. Bartsch)

**Donald Tsuyoshi Robertson**, "Oxidative Decomposition Reactions of Azoalkanes," May, 1990 (Organic-Dr. Shine)

**Thomas W. Robison**, "Synthesis of Novel Proton-Ionizable Crown Ethers," May, 1991 (Organic-Dr. Bartsch)

**Seung Rim Shin**, "Cation Radical Induced Electron Transfer Reactions of Semicarbazones and Phenols," May, 1991 (Organic-Dr. Shine)

## News of Faculty

**Dr. Richard Bartsch** organized a one-day Symposium on Macrocycles in Separation Science for the Separation Science and Technology Subdivision of the Industrial and Engineering Chemistry Division at the Spring 1991 National ACS Meeting in Atlanta, GA. He presented and invited paper entitled "Metal Ion Separations by Proton-Ionizable Crown Ethers and Their Polymers" at the First Hanford Workshop in Separation Science in Richland, WA, in July 1991.

**Dr. Dominick Casadonte** participated in the Texas Chemistry Forum at the University of Texas at Austin in May 1990 and presented a paper on "Photo-studies of  $\text{Cu(I)(diimine)(CNR)}^{2+}$  Complexes."

**Dr. Sandy Dasgupta** gave the plenary lecture on "Diffusion Based Devices in Atmospheric Sampling" at the Analysdagarna in Lund, Sweden, in June of 1990. This was followed by the presentation of an invited lecture on "Advances of Liquid Chromatography" at the National Environmental Research Institute in Copenhagen, Denmark. Beginning in 1990, Sandy was appointed as an Associated Editor of *Atmospheric Environment* and an Editorial Board Member of *Talanta*.

**Dr. David Knaff** has been appointed to the Editorial Advisory Board of *Experientia*.

**Dr. Tricia Metz** presented three papers at the 11th Biennial Conference on Chemical Education which was held in Atlanta, GA, in August of 1990. Titles of the papers were: "A Guided Design Problem-Solving Laboratory Program"; "Student Science Autobiographies: Telling Tales of Science Turnoff"; and "A Cog on the Wheel in the General Chemistry Machine." Tricia was the 1991 Coordinator for the U.S. National Chemistry Olympiad for the South Plains Section of the ACS.

**Dr. Jerry Mills** organized the Symposium of Microscale Experiments in Undergraduate and High School Chemistry Laboratories for the Biannual Conference on Chemical Education in Atlanta, GA, in August of 1990. In addition to giving a paper in that symposium he also presented an invited paper entitled "In-Class Experiments Using Microscale Techniques" in



*Dr. Jerry Mills receives the ACS South Plains Section Outstanding Service Award from Section Chairman Dr. Bruce Whittlesey at the 1991 Awards Banquet.*

another symposium. Jerry co-authored two general chemistry manuals: J. L. Mills and R. Chang, "Student Solutions Manual to Accompany Chang: CHEMISTRY," McGraw-Hill, 1991, 392 pages and J. L. Mills and R. Chang, "Instructor's Manual to Accompany Chang: CHEMISTRY," McGraw-Hill, 1991, 515 pages. Jerry received the 1990-1991 ACS South Plains Section Service Award. In his continuing effort to increase the popularity of chemistry at all levels, Jerry is a consultant for Tyco Industries and is assisting with improvements of the Tyco chemistry sets.

**Dr. Edward Quitevis** presented a paper on "Excitation Intensity and Polarization Effects in the Picosecond Spectroscopy of Molecular Aggregates" in the SPIE Symposium on Laser Spectroscopy in Los Angeles in January of 1990. For the Texas Chemistry Forum which was held at the University of Texas in Austin in May of 1990, his paper was entitled "Picosecond Ground-State Rotational Diffusion of Merocyanine 540 in Polar Solvents." Ed was granted tenure and promoted to Associate Professor in 1990.

**Dr. Richard Redington** gave an invited symposium contribution on "State Specific Tunneling in Tropolone" at the Spring 1990 National ACS Meeting in Boston. He also was a participant in the Photoinduced Proton Transfer Symposium in honor of Dr. Michael Kasha which was held in Tallahassee, FL, in January of 1991 and presented an invited paper entitled "MO Study of Singlets, Triplets and Tunneling in Tropolone."

### Welch Professor G. Wilse

**Robinson** was an invited speaker at the Gordon Research Conference on Radiation that was held in Newport, RI, in July of 1990. "Hydrated Electrons" was the title of his presentation.

**Dr. Dennis Shelly** gave a paper on "Effects of Solute Focusing on Zone Shape in Column-Planar Separations" at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy which was held in New York, NY, in March of 1990. He also participated in HPLC '90 the 14th International Symposium of Column Liquid Chromatography in Boston in May of 1990 and presented a paper entitled "Peptide and Amino Acid Determination by Micro HPLC with a Two-Chemistry, Post-Column Reaction Method." In 1990, Dennis founded "Microfusilonics," a firm specializing in fused silica micro-engineering to include microelectrodes, flow cells, integrated optical devices and OEM detectors for capillary separation techniques. Currently an electrochemical detector for capillary OTLC, CZE, MECC and ITP is under development.

**Dr. Henry Shine** gave an invited paper on "Organic Cation Radicals" at the Gordon Conference on Radical Ions in Wolfeboro, NH, in June of 1990.

**Dr. Robert Walkup** presented two posters at the 40th Gordon Conference on Natural Products Chemistry in New Hampton, NH, in July 1991. The presentations were entitled "Progress Report on a Synthetic Approach to the Spirobicyclic Bluegreen Algal Metabolites Oscillatoxin D and 30-Methylscillatoxin D" and "The Allene Approach to *cis*-2, 5-Disubstituted Tetrahydrofurans: Progress Toward the Macrodiolide Antibiotic Pamamyain-607." Bob also gave an lecture in the Distinguished Organic Chemists Lecture Series in the Department of Molecular Genetics at the University of Texas Southwestern Medical Center at Dallas in April of 1990. The title of his lecture was "Synthetic Studies of the Oscillatoxins, Tropical Marine Bluegreen Algal Metabolites."

**Dr. Richard Wilde** attended the 12th International Conference on Raman Spectroscopy in Columbia, SC, in August, 1990.

## News of Alumn and Former Departmental Faculty Members

**Dr. Joe A. Adamcik** (former departmental faculty member) graduated Cum Laude with a Doctor of Jurisprudence degree from the Texas Tech University School of Law in May, 1991. He took the Texas Bar Examination in August and is awaiting the results.

**Leah Bitalac** (MS '91) is a Research Chemist with Bristol Meyers-Squibb in Princeton, NJ.

**Larry D. Bratton** (BS '86, MS '89) is developing new polymers for microelectronics at Central Research for Dow U.S.A. in Midland, MI.

**Dr. P. Douglas Boatman, Jr.** (PhD '90) is a postdoctoral associate with Dr. Robert Holton at Florida State University where he is conducting synthetic studies of taxane anticancer compounds.

**Charles Britton III** (BS '90) is attending the University of Texas Southwestern Research Center in Dallas on a joint MD/PhD program. Britt was awarded a \$7,000 graduate fellowship by the Honor Society of Phi Kappa Phi.

**Dr. Kai-Tai Chang** (PhD '90) is a postdoctoral associate at the University of Washington Medical School in Seattle.

**Dr. Bong Rae Cho** (PhD '80) is Chairman of the Department of Chemistry of Korea University in Seoul, Korea.

**Dr. Moon Hwan Cho** was a Visiting Scientist in the laboratories of Dr. Bartsch for 20 months and has returned to his position as Associate Professor in the Department of Chemistry at Kangweon National University in Chuncheon, Korea. Partial financial support for his visit was provided by the Korean Science Foundation.

**Wenzen Chuang** (BS '88) is a chemistry teacher at Crosbyton High School in Crosbyton, TX.

**Dr. Leonard V. Cribbs** (PhD '84) is a Senior Research Chemist with the Alathon Polymers Division of OxyChem in Alvin, TX.

**Chris Criezes** (BS '90) has accepted a position with SPL Laboratories in Houston, TX.

**Dr. Raymond T. Cunningham** (BS '82, PhD '88) is a Senior Chemist in the Additives Research Group of Nalco Chemical Company in Sugarland, TX.

**Dr. Dennis W. Darnall** (PhD '66) is Chairman of the Department of Chemistry at New Mexico State University in Las Cruces, NM.

**Dr. J. J. Donaldson, Jr., M.D.**, (BS '36) has retired from his pediatrics practice (1948-1988) and continues to live in Lubbock, TX.

**Dr. Mary Ettel** (PhD '89) is an Assistant Professor of Chemistry in the Mathematics and Science Division at

Wayne State College in Wayne, NE.

**Dr. Johnny L. Hallman** (BS '82, MS '88, PhD '91) has accepted a position as Visiting Assistant Professor in the Department of Chemistry at Southwest Texas State University in San Marcos, TX, for the 1991-1992 academic year.

**Roseanne (Woo) Haltresht** (BS '77) has been promoted to Product Manager for Carbonless Paper in the Fine Paper Division of Mead Corporation in Dayton, OH.

**Leanne Mayerly Harvey** (BS-Chemistry and BA-Mathematics '75) has been promoted to Quality Assurance Superintendent at the Hoechst Celanese plant in Bishop, TX and recently celebrated her 15th anniversary with Hoechst Celanese. She has five children (four boys and one girl) with ages ranging from 3 to 11.

New postdoctoral coworkers with Dr. Bartsch include: **Dr. Takashi Hayashita** from Kanagawa University in Japan; **Dr. Stanislaw Kaprzyk** from the Polish Academy of Sciences in Warsaw; and **Dr. Visvanathan Ramesh** from the University of Bombay in India.

**Dr. William R. Heineman** (BS '64) is Distinguished Research Professor in the Department of Chemistry at the University of Cincinnati.

**Dr. Paul G. Hipes** (BS '81) and wife Lesa and children David and Caroline have moved from Pasadena, CA to Scotch Plains, NJ.

**Dr. Louis N. Irwin** (BS '65) has moved to the University off Texas at El Paso as Chairman of the Department of Biological Sciences. Prior to joining the UTEP faculty, he was a Professor of Biology at Simmons College in Boston for 11 years.

**Dr. Robert R. Kane** (PhD '90) is a postdoctoral associate with Dr. Frederick Hawthorne at UCLA and is involved in the production of novel carbonane-containing neutron-capture therapeutic agents.

**Dr. Albert C. Kovelesky** (former visiting faculty member) has joined the faculty of Limestone College in Gaffney, SC, where he is establishing a chemistry program.

**Mark B. Kovich** (BS '88) is a surfactant chemist with Whirlpool Company in Benton Harbor, MI.

New postdoctoral coworkers with Dr. Purnendu K. Dasgupta include: **Dr. V. Kuban** from Masaryk University of Bruno in Czechoslovakia; **Dr. Liyuan Bao** from Xiaomen University in China; and **Dr. Hyun-Keung Chung** who received his doctorate from Oregon State University.

**Dr. Jamine Lee**, a postdoctoral associate and research scientist at Texas Tech from 1982 to 1990, is a Research Scientist with Spectral Services, Inc. in Burlington, MD.

**Dr. Jong Gun Lee** (PhD '78), who is Professor of Chemistry at Pusan National University in Korea, spent six

months as a Visiting Scientist at Texas Tech under the sponsorship of UNESCO.

**Dr. Joung Hae Lee** has returned to the Korea Standards Research Institute after completing one year of postdoctoral study with Dr. Bartsch. Primary financial support for his visit was provided by the Korea Science and Engineering Foundation.

**Dr. Wang Keun Lee** (PhD '89) has been appointed Assistant Dean of the College of Education at Chonnam National University in Korea.

**Mr. Zuang Cong Lu** (MS '90) is a Research Chemist with Metre-General, Inc. in Westminster, CO.

**Patsy (Woods) Martin** (BS '76) has been appointed to the Texas Tech University Board of Regents by Governor Ann Richards.

**Joseph C. Martz**, who performed undergraduate research with Dr. Robert D. Walkup while at Texas Tech, is a graduate student in chemical engineering at the University of California at Berkeley. He is developing a process which uses an electrically generated plasma to extract plutonium for low level radioactive waste.

**Dr. Gene McDonald** (BS '84) completed doctoral studies in chemistry at the University of Texas at Austin and is currently a postdoctoral associate with Dr. Carl Sagan at Cornell University in Ithica, NY. He is simulating planetary atmospheres in the laboratory and analyzing the residues.

**Dr. Joseph A. McDonough** (PhD '90) is a Research Chemist at the Hoechst Celanese Research Center in Corpus Christi, TX.

**Dr. William L. McDowell** (MS '96, PhD '88) is Laboratory Manager for a new analytical chemistry laboratory that TMA/Eberline is establishing in Oak Ridge, TN

**Dr. James C. McGraw, D.D.S.**, (BA '55) is a Professor of Endodontics at the University of Washington School of Dentistry in Seattle, WA. Jim served as President of the American Association of Endodontists for 1990-91.

**Dr. Jerry D. McLaughlin, M.D.**, (BS '86) graduated from the University of Texas Health Science Center at Houston Medical School in May of 1991.

**James M. Mullins** (MS '50) passed away on March 18, 1990 in Amarillo, TX. Jim was a chemist and environmental coordinator with Celanese Corporation for 35 years before he retired in 1986.

**Dr. Mark D. Nordyke, M.D.** (BS '78) is an orthopedic surgeon practicing in Lubbock, TX.

**Dr. Uriel Olisher** from the Weizmann Institute of Science in Israel was a Visiting Scientist in the laboratories of Dr. Bartsch for five months.

**Dr. Nihal U. Obeyesekere** (MS '86, PhD '89) is a postdoctoral research associate at the M.D. Anderson Medical Center in Houston, TX.

**Dr. Gyooson Park** (PhD '88) has accepted a position as Assistant Professor in the Department of Chemistry at Kookmin University in Seoul, Korea.

**Brad Pender** (BA '81) is attending the University of Texas Medical Branch in Galveston.

**Dr. Werner L. Peticolas** (BS '50) is Professor of Chemistry at the University of Oregon.

**Dr. Fati Reza**, who conducted undergraduate research at Texas Tech with Dr. John N. Marx, is Director of Research for Enzo Biochem, Incorporated, in New York City.

**Dr. Thomas W. Robison** (PhD '91) is a postdoctoral research associate at Los Alamos National Laboratory.

**Dr. James F. Ryder** (BA '83) has completed Family Practice Residency in Fort Worth, TX. He married Mary Margret O'Brien on October 7, 1989.

**Dr. K. Jane Scott**, D.O., (BS '77) has a practice in Lubbock, TX.

**Dr. Jong-Chaur Shieh**, M.D., (MS '78) is a Clinical Assistant Professor of Rehabilitation Medicine at the State University of New York in Buffalo.

**Dr. Bal Ram Singh** (PhD '87) has joined the faculty of the Department of Chemistry at Southeastern Massachusetts University (now the University of Massachusetts, Dartmouth) as Assistant Professor after completing postdoctoral work at the University of Wisconsin at Madison.

**Dr. Robert Small** (MS '64) left Wesley Industries for a position with First Chemical Corporation in Pascagoula, MS.

**Dr. Pill-Soon Song** (former departmental faculty member), who is Dow Chemical College Professor and Chairman of the Department of Chemistry at the University of Nebraska, is the winner of the 1991 American Society for Photobiology Research Award. He is being recognized for his pioneering research and scientific achievements in the field of photobiology, especially as they relate to photosensory transduction of stentor.

**Karin Strout** (BS '87) is the Laboratory Supervisor for the Michelin Tire plant in Sandy Springs, SC, which is the only raw material processing Michelin plant in the U.S.

**Dr. Morris F. Stubbs**, a former Coordinator of General Chemistry of Texas Tech passed away in Albuquerque, NM, on March 22, 1990.

**Dr. Lidia Kupczyk-Subotkowska** and **Dr. Witold Subotkowski** returned to Texas Tech in May 1990 for continued postdoctoral research with Dr. Shine. They previously worked with Dr. Shine during the period 1983-86.

**Dr. Abdul S. Thannoun**, M.D., (BS '81, MS '85) has graduated from the Medical School of the University of Texas Health Science Center in Houston and is performing his residency in internal



Horton H.  
(Tex) Morris

## Morris Received TAPPI Award

Horton H. (Tex) Morris (BS '49), President of SSI Consultants in Peaks Island, ME, and retired Vice President of Research and Development for Freeport Kaolin Co. (now part of Englehard Corporation), was honored by TAPPI's Coating and Graphic Arts Division Award in 1990. The award recognized his outstanding contributions to coating technology. Of particular note was his hard work in discovering and developing delaminated clays, as well as his fundamental studies on calcined clays, ultrafine calcium carbonates and the synthesis and reactions of glycidic esters. He is the author or co-author of over 60 publications and patents in the fields of clay technology and organic chemistry. His patents included those covering the delamination of clays and other materials, calcined clays, organo-clay polymer compositions, zeolite purification, fine media milling of starch to form adhesives, and methods of treating minerals to improve their whiteness.

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medicine at the University of New Mexico School of Medicine in Albuquerque, NM.

**Stephen D. Wagy** (BS '87, MS '89) is the Pharmaceutical Sales Representative for Pfizer in the Houston area.

**Louis Whaley** (MS '90) is a Research Chemist at Nova Pharmaceutical Corporation in Baltimore, MD.

**Linda (Bagwell) Wofford** (BS '85) received a MS degree in chemistry from Brown University in 1988 and is working as an environmental chemist in Rhode Island. Her husband, Will Wofford, is also a Tech-Ex having received a BS degree in chemical engineering in 1985.

**Dr. Jesse Yeh** (PhD '88) is an Assistant Professor in the Chemistry Department at South Plains College in Levelland, TX.

## New Introductory Course in Applied Chemistry

In Fall Semester of 1991, the Department of Chemistry and Biochemistry will offer a new introductory chemistry course in applied chemistry. Chemistry 1301-Applied Chemistry is a non-mathematical course which will provide students with an awareness of how chemistry is involved in everyday activities. The course is designed to appeal to the non-science major. It will suppose no previous education in chemistry or the physical sciences and will offer a broad overview of how chemistry and chemicals affect everyday life. The course will be taught by Dr. Sandy Dasgupta.

## Faculty and Staff Computer Network

The department computer network for faculty and staff is now completed and (hopefully) thoroughly debugged. During the past year, the major addition has been an electronic mail service. QuickMail from CE Software has been installed and is enthusiastically endorsed by most users. Over 400 messages are currently flying back and forth each week.

We can now send a message to any of the 24 faculty members and to 10 staff members with a couple of clicks (once it is typed, of course). Just as easily a message can be sent to selected groups of users, such as "all faculty" or members of the Analytical Chemistry Division. This saves lots of time and replaces many of the paper memos which were used previously.

A convenient feature of the E-mail system is the ability to attach other computer files from any source to the memo that is sent. Since our departmental network is linked to the campus-wide Ethernet, we can now download class enrollment files from the Registrar's Office and use them in grading programs, stockroom checkout in instructional laboratories, etc. At present, the Department of Chemistry and Biochemistry is the only department on the Texas Tech campus which has a networked computer on every faculty member's desk.

## Gifts to the Department

In addition to monetary gifts for scholarships from alums and our industrial friends, we received several gifts-in-kind during the past 18 months.

When the American Fructose plant in Dimmitt, TX, decided to disband their research operation and retain only the production facility, they made available to the Department of Chemistry and Biochemistry a large amount of

chemicals and laboratory equipment and even some laboratory furniture. The estimated value of this donation exceeded \$95,000. (Who says that Santa Claus doesn't live in Dimmitt?)

We also received donations of some chemicals, glassware and some equipment from Mrs. Georgia Barham of Lubbock, TX, and from the Department of Public Safety. The DPS donation was from items seized during a raid of a drug-

manufacturing facility.

The Biotechnology Instrumentation Facility, which is located in the Chemistry Building, received a donation of a new model 9400 Excell automated peptide synthesizer worth \$45,000 from Milligen/Biosearch in Burlington, MA.

We greatly appreciate these gifts-in-kind which are of immediate use in our research and teaching laboratories.

\* \* \* \* \* **OPERATION ALUMNI SCHOLARSHIP** \* \* \* \* \*

Enclosed is my check made out to the Alumni Scholarship Fund.

Amount    \_\_\_\_\_ \$50.00    \_\_\_\_\_ \$25.00    \_\_\_\_\_ \$15.00    \_\_\_\_\_ Other

My employer participates in a matching program for donations by employees.

Please contact: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## *Classnotes*

Do you enjoy reading about friends and classmates? Why not return the favor—drop us a line and a (preferably black and white) photo.

- |                                    |  |   |
|------------------------------------|--|---|
| <input type="checkbox"/> Married?  | <input type="checkbox"/> New Job?        | <input type="checkbox"/> New Baby?        |
| <input type="checkbox"/> Promoted? | <input type="checkbox"/> Take a Trip?    | <input type="checkbox"/> See a Classmate? |
| <input type="checkbox"/> Moved?    | <input type="checkbox"/> Back in School? | <input type="checkbox"/> Other?           |

Send us details: \_\_\_\_\_  
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Name \_\_\_\_\_  
 Class \_\_\_\_\_ College \_\_\_\_\_  
 Address (\_\_\_\_\_ New?) \_\_\_\_\_  
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## Where are you, Alums?

Let your news pour in. Send it **now** before you forget, and before your good intentions join all others in paving the road to you known where.

## Donations to the Alumni Scholarship Fund

Thanks to our alums and other supporters who have brought us close to the \$10,000 needed to endow our first Alumni Scholarship. The current balance in the Alumni Scholarship Fund account is \$8,425. Please give generously to help us reach our goal!

We are pleased to acknowledge the following donations which were received since Newsletter 11 was published.

Mr. Larry D. Bratton (BS '86, MS '89)  
Dr. Jiin Duey Chen (BS '65, MS '69, PhD '73)  
Dr. Bong Rae Cho (PhD '80)  
Dr. Dennis Darnall (BS '63, PhD '66)  
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Dr. Michael R. Smith (BS '80)  
Ms. Karin Stout (BS '87)  
Texaco Foundation (matching gift)  
Mr. L O'Brien Thompson (BA '31)



*At a social gathering for faculty and staff in the Bartsch home, Sellie Shine (right) talks with Dr. David Birney and his wife Nadine.*

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