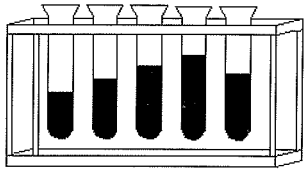
the Test Tube

Newsletter 1998 (#15)

The Department of Chemistry and Biochemistry

Texas Tech University Lubbock, Tx

Editor: Dominick J. Casadonte, Jr..

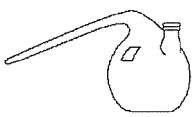


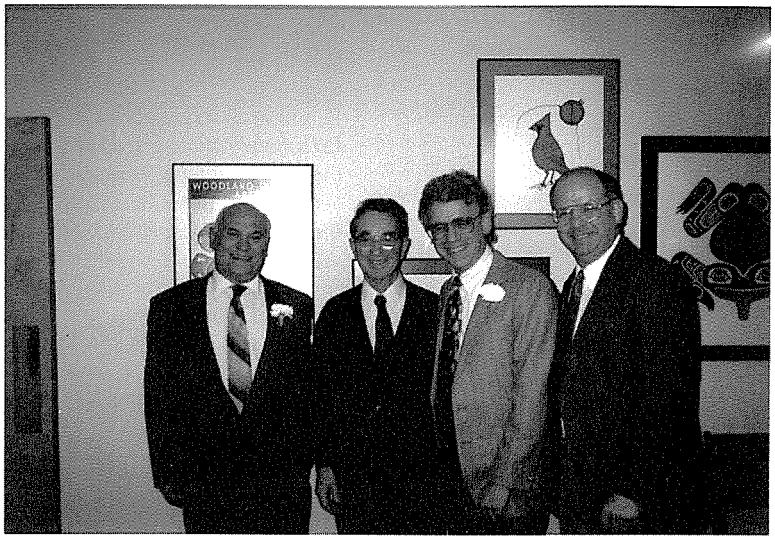
First, An Apology

Welcome to what I hope will be a new era in the Department of Chemistry and Biochemistry vis a vis *The Test Tube*. As you can see, the design and layout is different from previous issues. This is the first issue of the TT which has been entirely desktop published. Gone are the days of cutting and pasting (on anything but a computer screen, that is).

As the title indicates, I must begin this issue with an apology to all of our alumni and faithful supporters who have been wanting information over the past three years about the department. You may have thought that our cold fusion experiments finally panned out - a little too well, and what used to be the Chemistry and Biochemistry Department has been a large hole in the ground for the last third of a decade. Nothing could be further from the truth. As you will see in this issue, we have been up to some exciting things since 1995 and have had a host of new faculty and staff join us in our efforts.

We began the Test Tube in 1995 thinking that we should upgrade our data base of alumni and friends. This turned out to be a larger task than anticipated. I also decided to learn how to do desktop publishing when I took over the reigns as editor from Bob Walkup (who is now in his second year of medical school). Its amazing how three years can slip by. I take full responsibility for keeping you in suspense. But, as you can see, we're back on line now. So, let the reactions begin!...





The Four Brothers (With Apologies to Woody Herman): *Our Current and Three Previous Department Chairs in a Line Up, er, Rare Photo-Op. From L to R: D. Max Roundhill (Current Chair), Henry Shine, David Knaff, and Richard Bartsch.*

The Chair Conformation

by D. Max Roundhill

Let me begin by offering my thanks to Dom Casadonte in accepting the responsibility of getting the *Test Tube* going again. We hope to make it a more regular mailing, and we will keep trying to focus on events that are of interest to as many of you as possible. Both the department and Texas Tech University continue to change and evolve. Over the past few years we have seen faces change. Dr. Jerry Mills is retired and in Hawaii, Dr. Bob Walkup is training to be a medical doctor, and, sadly, we are losing Dr. Tricia Metz to the University of Georgia. We do have new faces though. Drs. Li and Quideau joined the organic division in September 1997, at the same time as Dr. Wenthold joined the physical division. Previous to these arrivals, Dr. Makhatadze and myself arrived in January 1996.

Many exciting things are happening in the department. We have expanded machine shop facilities and purchased a new lathe for doing high precision work. We are just about to yet again upgrade and improve our computational capabilities for both the teaching and research components of our faculty, we have inaugurated a lectureship in honor of the career of Dr. Henry Shine, and we have recently begun a biannual research seminar program for undergraduates in the program. Nevertheless, we are not losing sight of our tradition. Our awards banquet in conjunction with the local ACS Division was highly successful yet again, and we always have time *(cont. pg. 4)*

What's Been Going On?

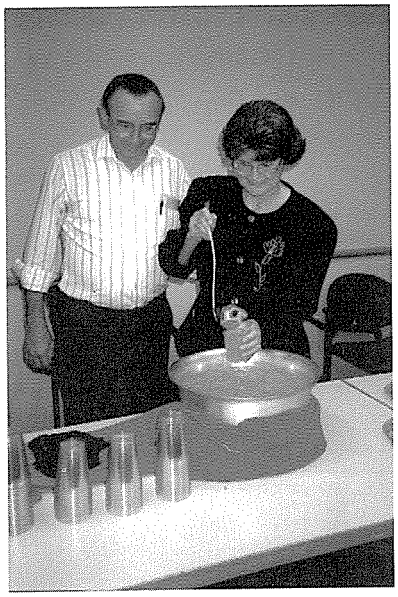
New Staff Added to Department

It would be very difficult to provide a narrative of all that has happened in the past three years. Besides the addition of new faculty (see "who's v" later on), one of the more significant changes in the department involves new staff members who have joined us. So, in case you're ever in the neighborhood and want to stop by, these are the staff you might run into since the last newsletter. See how many you recognize from your time at TTU!

Justo Adame, Stockroom Clerk
Julie D. Bednarz, Secretary II
Martha Jane Bradley, Secretary II
Jennifer Dunfield, Administrative Secretary
John D. Evans, Chemistry Business Manager
Pamela J. Gardner, Secretary II
Bill Good, Analytical Specialist
Dahlia Guerra, Secretary III
Jimmie R. Hall, Manager, Chemistry Building Operations
Duane C. Hindes, Technician IV
Kathie Marshall, Clerical Specialist II
David Wayne Purkiss, Spectroscopy Technologist
LaQuetta Purkiss, Prep Lab Chemist
Noah H. Solis,Technician III
Cheryl L. Starkey, Clerical Specialist III
Jim Stephens, Glass Shop Supervisor
Kenneth W. Taylor, Stockroom Clerk
Jerry A. Walton, Technician III

Jimmy Hall Honored for Forty Years of Service

On September 26, 1997 a special reception was held for Jimmy Hall in honor of forty years of faithful service to the Department of Chemistry and Biochemistry. Among the participants were Jimmy's wife Oneta and several emeritus faculty members. Dr. Whittlesey organized the event and Dr. Shine provided a brief retrospective of Jimmy's activities on behalf of the department. A good time was had by all and we are looking forward to another forty years of Jimmy's help and advice.



Let's Celebrate: *Jimmy and Oneta Celebrating Jimmy's Forty Years of Service to the TTU Chemistry and Biochemistry Department. Punch Anyone?*

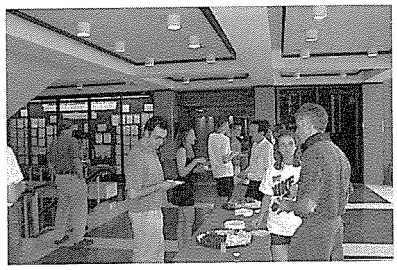
ACS-SA Back in Business

The American Society Student Affiliate (ACS-SA) has been busy this year. Among its activities, the ACS-SA participated in a Halloween show for children through the University Center Programs in October, were instrumental in outreach to the senior citizen community via a chemistry demo show at the Lubbock Senior Citizen's Center in November for National Chemistry Week, and did "chemistry magic" shows for Northridge and Frenship Elementary Schools.

This year, for the first time, the ACS-SA sponsored a reception for graduating seniors in the chemical sciences. The ACS-SA is to be commended for its efforts to support chemistry on the South Plains, and we look for their continued involvement in future activities.

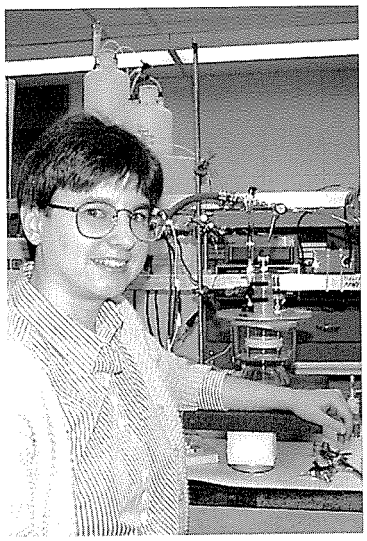
Officers, 1997-1998:
President: David Laney
Vice-President: Jennifer Doktorski
Secretary: Melissa Fortner
Treasurer: Abigail Davalos
Activities Coordinator: Tina Phengsengkham

Officers, 1998-1999
President: Abigail Davalos
Vice President: Denise Butler
Secretary: Lena Shoukfeh
Treasurer: Carrie Bates
Activities Director: Curtis Thornburg



I'm Outta Here: *Graduating Senior Melissa Fortner (Center, Black Dress) and Faculty and Students Celebrate During an ACS-SA-Sponsored Reception for Graduating Seniors.*

Who's "v" (That's c/λ of Course!) On The Faculty?



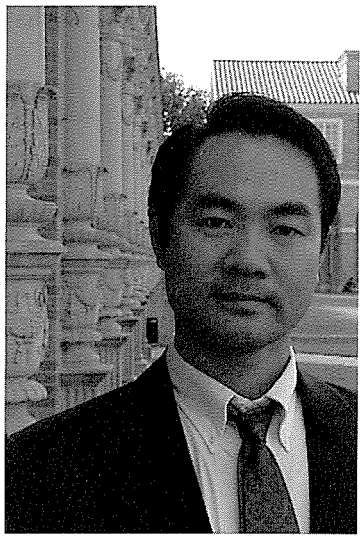
Carol Korzeniewski *(Fall, 1995)*

Professor Korzeniewski's research involves using sensitive analytical techniques to monitor chemical and physical processes at liquid-metal interfaces. These processes are classified as electrochemical and play a vital role in many areas of technological importance.

One area of research involves mapping pathways of surface catalyzed organic oxidation reactions. Small alcohols and aldehydes are under study, because of their importance as fuel cell reactants and intermediates. The oxidation of these species at the surface of a transition metal catalyst, such as platinum, releases electrical energy. Fuel cells based on the oxidation of hydrogen supply electricity for space exploration, and methanol powered fuel cells are investigated for use in commercial power generation and electric vehicles. The Korzeniewski group studies factors that cause efficiency loss in these reactions. Electrochemical, spectroscopic and chromatographic techniques are used. Infrared spectroscopy aids the identification of species that block, or poison, the catalyst surface. Detection at the picomole level can be achieved for certain adsorbates. Gas and liquid chromatography allow the identification of soluble, partial oxidation products.

A related area of research involves the study of adsorption at metal-liquid interfaces. The adsorption of carbon monoxide (CO), an important fuel cell intermediate, is studied most often. Infrared spectroscopy is used to investigate how the voltage (potential) applied to the metal influences the chemical bonding and two dimensional structure of CO molecules on the surface. Defining experimental conditions whereby molecules bonded to different structural sites on surfaces can be identified based on independent infrared absorption bands has been an important focus. More recently, we have been probing the energetics of CO adsorption on electrodes. We have designed a thermostatted electrochemical cell that allows infrared measurements to be made at temperatures above and below ambient. Above 30 °C, carbon monoxide desorbs slowly from platinum. We have been able to measure the desorption rate of CO from electrodes at different temperatures and derive the desorption activation energy at specific potentials.

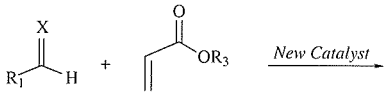
Single crystal materials are used frequently in this research to investigate how the arrangement of atoms on the metal surface affects adsorption and reactivity. Many of the single crystals are grown and oriented in the laboratory. We also prepare Pt, Pt-Ru and Pt-V crystallites for use as fuel cell catalysts.

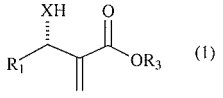


Guigen Li *(Fall, 1997)*

Professor Li is interested in developing new asymmetric reactions catalyzed by metal/ligand complexes and/or directed by chiral auxiliaries.

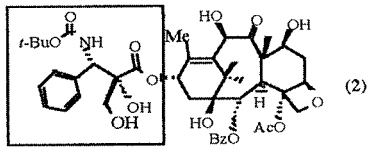
The specific reactions include an asymmetric catalytic Baylis-Hillman reaction, functional group assisted catalytic aziridination and other cyclic additions which can provide numerous chemically and biologically important precursors. For example, Baylis-Hillman adducts (1) have been used in the design and synthesis of an anti-cancer drug (2).





(1)

X = O; NTs; *et al.*



(2)

Novel transition metal and rare earth metal catalysts tethered with various covalent and non covalent ligands will be designed, synthesized and screened. Combinatorial libraries of ligand/metal-complexes will be used to aid in the catalyst selection process. The specific goals of this program are to achieve high chemical selectivity, enantioselectivity and yield, and to improve the catalytic turnover so as to minimize catalyst loading. Additionally, the catalytic cycles, the mechanism of chiral induction and reaction kinetics will be systematically studied.

Professor Li is also interested in bioorganic and medicinal chemistry, especially in peptide and peptidomimetic drug design, synthesis and structure-activity-rela in bioorganic and medicinal chemistry, especially in peptide and peptidomimetic drug design, synthesis and structure-activity-relationship in bioorganic and medicinal chemistry, especially in peptide and peptidomimetic drug design, synthesis and structure-activity-relationship (SAR) studies which are important in treating diseases such as AIDS, cancer and diabetes. Opioid and organ-selective address peptides will also be studied. This program will directly benefit from the new synthetic methods described above by utilizing the resulting unusual amino acids, amino aldehydes, and amino epoxides.

George I. Makhatadze *(Spring, 1996)*

Research in the laboratory of Professor Makhatadze is directed towards understanding the structural and thermodynamic basis of the contributions of individual

molecular components to the self-assembly of macromolecular complexes.

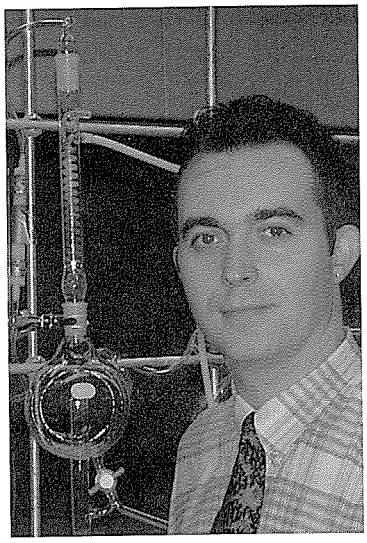
In order to probe the role of different interactions in protein folding and protein interactions with the ligands (ions, DNA, RNA, small effectors), a variety of experimental techniques as well as computational methods of analysis are used. Recombinant DNA technology is used to incorporate different amino acid residues at a given position in a protein sequence. The effects of these mutations on the overall energetics, structure and function of proteins are measured under different conditions such as salt concentration and ion type, temperature and pH.

Experimental techniques assessing energetics include scanning calorimetry, titration calorimetry, circular dichroism spectroscopy and fluorescence spectroscopy. Structural information on the systems is obtained in collaboration with experts in multidimensional NMR spectroscopy and X-ray crystallography. Three projects, largely overlapping in concept, are under development in the laboratory.

The first project studies the functional role of binding of Ca^{2+} to the S100P protein in regulation of differentiation of prostate cancer cells. A detailed understanding of S100P function in molecular terms, specifically in terms of proteins that transduce its signal, may provide new substrates for the development of more effective therapies for prostate cancer.

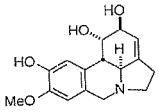
The second project deals with ligand-controlled interactions in a protein/DNA system. The energetics of specific binding of the so-called major cold-shock protein (Csp) to a single-stranded DNA is under study. Understanding of such interactions will lead to man-made DNA-binding proteins that can target expression of specific genes involved in human genetic disorders.

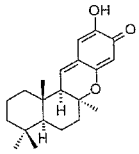
The third project studies the role of specific interactions in the initiation and termination of α-helices in proteins. The model system for this study is the α-helix of ubiquitin. The rules derived from this study will provide important background for biotechnological design of more efficient biocatalytic molecules with new or improved biological function.



Stéphane Quideau ***(Fall, 1997)***

Dr. Quideau's research program concerns the development of new methodologies, based in particular on the chemistry of oxidized phenol intermediates, for natural products synthesis, and the utilization of organic synthesis to probe biological systems at the molecular level. One principal area of investigation focuses on synthetic and biomechanistic studies of bioactive phenolic and quinonoid natural products. Novel approaches for the concise synthesis of, *inter alia,* lycorine-type *Amaryllidaceae* alkaloids and puupehenone-related *Verongid* sponge shikimate-sesquiterpenoids are under development.





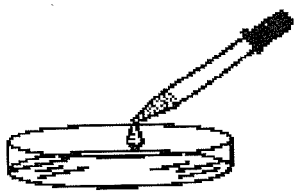
The puupehenone marine metabolites constitute choice molecules for the bioorganic phase of this investigation aimed at elucidating the covalent modification of nucleophilic biomolecules (e.g., DNA, enzymic proteins, and antigenic peptides) by electrophilic quinonoid natural products. Interest in this bioconjugation chemistry is based on the hypothesis that such perturbations of key biomolecules have significant biochemical implications which underlie the therapeutic activity of these natural products. Synthesis of appropriate model compounds and detailed structural determination by multidimensional NMR spectroscopy serve to identify the sites of attachment onto the natural product skeleton and permit the acquisition of the chemical and spectroscopic information necessary for the preparation and characterization of genuine bioconjugates. The knowledge thus gathered will contribute to the development of selective and efficient natural product-based pharmaceutical agents.

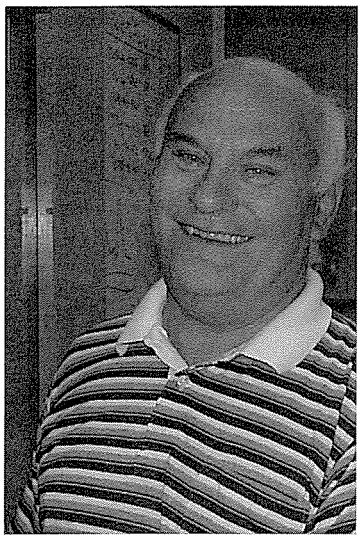
Another area of investigation takes place on the environmental organic chemistry front, and deals with the chemical genesis and physico-chemical properties of humic substances, structurally ill-defined biopolymers found in soils and aqueous environments. Organic synthesis, in concert with molecular modeling and NMR spectroscopy, is used to understand better these elusive but environmentally important entities, in particular the lipid-based marine fulvic acids, with the aim of developing novel biomimetic chelators of toxic heavy metals for environment clean-up. Both solution- and solid-phase synthetic techniques will be exploited to accomplish this objective.

The Chair Conformation (cont.)

to closely work with both our undergraduate and graduate students.

I extend to all of you an invitation to visit the department when you are back in the Lubbock area. Even though I have been here for only a short while, I am sure you will find someone on the faculty who you know. I am also sure that Dr. Casadonte will welcome suggestions you may have for items of interest in future editions of the *Test Tube*. Please keep in touch. We will always be pleased to hear from you about your families and careers.



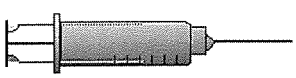


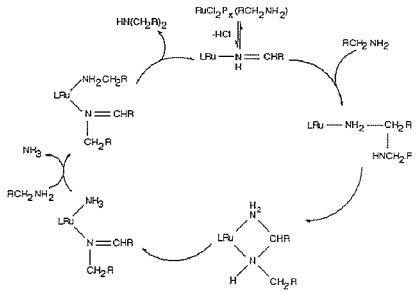
D. Max Roundhill *(Fall, 1996)*
Department Chair

Professor Roundhill's interests focus on the Inorganic and Organometallic chemistry of heavy and precious metals. Although the principal focus of our work is synthetic chemistry, the target compounds are designed for a range of different applications.

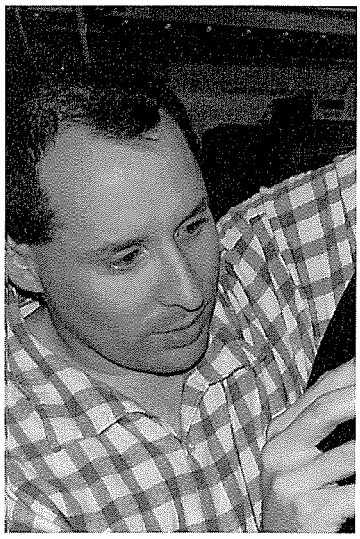
The first application involves the design and synthesis of chemically modified calixarenes for the *extraction* of heavy and precious metals from aqueous solution into an organic solvent. These calixarenes usually have sulfur groups appended in order that they can be selective for these particular groups of metals. The targeted metals are mercury, lead, cadmium, gold, palladium and platinum. This choice is made because of the high toxicity and commercial value of these metals. A particular goal is to synthesize complexants that can bind these metals under one set of experimental conditions and then release them when the conditions are changed.

The second application is focused on synthesizing amide and amine substituted calixarenes that can be used as extractants for uranium and for anions. Calixarenes are particularly appropriate for these applications because they are inexpensive and chemically stable to the conditions of high acidity and alkalinity in which waste uranium and anions are found.





The third application is in the use of precious metal complexes as homogeneous catalysts. Our particular focus is to develop catalysts that are active in hydration and amination reactions. These reactions are important because they allow the direct formation of alcohols and amines from alkenes. The complexes that are being targeted are ones that have tertiary phosphines as ligands. These phosphines are ones that have functional groups appended that result in the ligand and metal complexes being soluble in water and liquid ammonia. Reactions are carried out in a drybox or using Schlenk line techniques, and products are analyzed using a combination of chromotgraphic and spectroscopic techniques.



Paul G. Wenthold *(Fall, 1997)*

Professor Wenthold's research involves the use of negative ion photoelectron spectroscopy (NIPES) for the study of highly reactive intermediates. Experiments are carried out by generating a negative ion in the gas phase, and then intersecting the ion with the output of a fixed frequency laser. The negative ion absorbs a photon and ejects an electron leading to formation of the neutral in a specific electronic, vibrational, or rotational state (Figure 1).

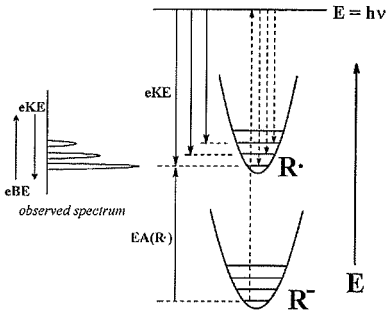


Figure 1

In the NIPES experiment, the kinetic energies of the detached electrons are measured to obtain information about the electronic, vibrational, and rotational energy levels of the neutral molecules formed.

The types of systems in which Dr. Wenthold is interested include radicals, carbenes, biradicals, and transition states. Radicals, carbenes, and biradicals are often invoked as intermediates in chemical reactions, but little is known about their physical properties because they are difficult to prepare and isolate. In the NIPES experiments, spectroscopic information for these species can be obtained starting from
the stable negative ions.

A special case of negative ion photoelectron spectroscopy occurs when the negative ion has geometry corresponding to a neutral transition state (Figure 2).

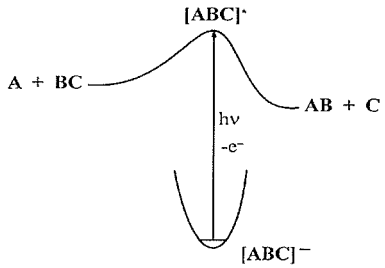
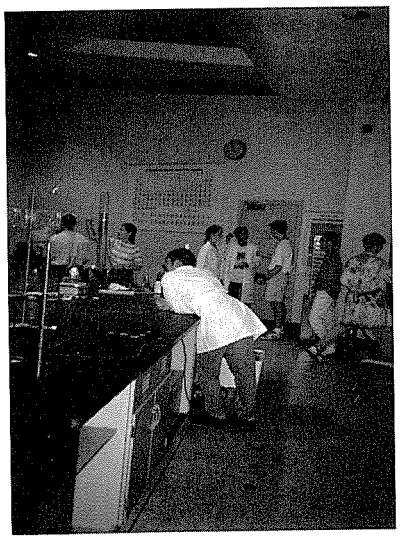


Figure 2

In this case, it is possible to carry out *transition state spectroscopy.* Transition state species have very short lifetimes, existing for only one vibrational period, and are therefore extremely difficult to study using conventional techniques. Negative ion photoelectron spectroscopy is one of the few experimental methods that can be used to obtain detailed information about species as short-lived as these.

Summer Fun

Summer is just around the corner, time for intramural softball(we were the fall '95 men's and summer '96 co-rec team champions in our division!), the Welch Summer Scholars and Clark Foundation programs. The latter programs provide us with 10-15 gifted high school students selected regionally (Welch) and nationally (Clark) based on SAT scores and science aptitude. Most of these students, who are mentored in faculty research labs for a 6-8 week period, go on to major in science at some of the leading technical schools in the nation (including Texas Tech!). Many of the student's research projects lead to publication in research journals. Dr. Dennis Shelly (analytical division) coordinates the program and provides enrichment opportunities during their stay (like a trip to Carlsbad Caverns to study the aerodynamics of bat flight, or a trip to Palo Duro Canyon to see the play "Texas", where they can study the aerodynamics of dancing...).



It's Magic: *Welch Summer Scholar Students Participating in a Chemistry "Magic" Show for Upward Bound Students.*

Faculty News and Notes

Richard A. Bartsch was a co-organizer for the Symposium on Recognition with Imprinted Polymers which was held during the 213th ACS National Meeting in San Francisco in April 1997. This was the world's first international symposium on molecular and ionic recognition with imprinted polymers. He attended the 35th National Organic Chemistry Symposium in San Antonio in June 1997 together with postdocs Sadik Elshani and Vladimir Talanov and graduate students Marty Campbell, Robert Hanes, and Russell Johnson.

In late July and early August 1997, Dr. Bartsch traveled to South Korea and Japan. In Korea, he presented seminars entitled "Applications of Proton-Ionizable Lariat Ethers in Metal Ion Separations" at Korea Military Academy, Korea University, Kang Won National University, Pusan National University, and Chung Nam National University. Dr. Bartsch gave a plenary lecture entitled "Metal Ion Complexation by Lariat Ethers and Their Polymers" at the XXII International Symposium on Macrocyclic Chemistry in Seoul. In Japan, he presented an invited lecture on "Alkali Metal Cation Separations with Proton-Ionizable Lariat Ethers in Polymer Inclusion Membranes" at the Post ISMC Meeting in Saga.

Dr. Bartsch presented a paper on "New Bifunctional Anion-Exchange Resins for Plutonium Separations" at Plutonium Futures - The Science in Santa Fe in August 1997. He attended the 214th National ACS Meeting in Las Vegas in September 1997 and presented an invited paper on "Metal Ion Separation by Transport Across Polymer Inclusion Membranes Containing Proton-Ionizable Lariat Ethers" in the Symposium on Recent Advances in Metal Ion Separation and Preconcentration."

In November 1997, Dr. Bartsch was in Cancun, Mexico at the Fifth Chemical Congress of North America where he presented an invited paper entitled "Metal Ion Separations with Proton-Ionizable Lariat Ethers" in the Symposium on Separation Science: Directions for the Future.

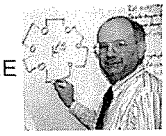
Richard A. Bartsch served as a review panel member and evaluated proposals submitted to the Department of Energey's Environmental Management Science Program in Washington DC in June 1997.

He was elected as a Board Member of the recently formed Society for Molecular Imprinting which is based at Lund University in Sweden. Dr. Bartsch was appointed as Director of the Preprofessional Health Careers Office at Texas Tech University.

Richard A. Bartsch is the co-inventor, with G. D. Jarvinen and S. F. Marsh of Los Alamos National Laboratory, on a patent entitled "Ion Exchange Polymers for Anion Separations," U.S. Patent 5,670,550, September 23, 1997.

Robert A. Bartsch, son of Richard A. Bartsch, is an Assistant Professor at the University of Texas of the Permian Basin. He teaches courses in psychology and statistics.

1998 ARCS SCIENTIST OF THE YEAR
ARCS Achievement REWARDS for College Students



Dr. Richard Bartsch

Kudos: *Dick Bartsch was selected as the 1998 Scientist of the Year by the ARCS (Achievement Rewards for College Scientists) Local Section.*

Purnendu (Sandy) Dasgupta has been busy on the lecture circuit, giving the following invited lectures in 1997:

- Pittsburgh Conference, Atlanta, GA. March. Analytical Chemistry in a Drop.

-Center for Process Analytical Chemistry, University of Washington, Seattle, WA. May. Field Portable Capillary Liquid/Ion Chromatographs.

-Nineteenth International Symposium on Capillary Chromatography and Electrophoresis, Wintergreen, VA. May. Trace Gas Measurement in Exhaustive Electromigration Electrophoresis.

-Asianalysis IV, Keynote Lecture, Fukuoka, Japan. May. Analytical Chemistry in a Drop.

-Japan Society for Analytical Chemistry, Spring Annual Meeting. Keynote Lecture, Fukuoka, Japan. May. The Present and Future of Ion Chromatography.

-Kyushu University, Fukuoka, Japan. May. Analytical Chemistry in a Drop.

-Symposium on Functional Structure and Analytical Chemistry, Tohoku University, Plenary Lecture, Sendai, Japan. May. Analytical Chemistry in a Drop.

-Waste Testing and Quality Assurance Symposium (WTQA'97), Arlington, VA, July. A Portable Ion Chromatograph.

-Univesity of Alberta, Edmonton,

Canada, July. Analytical Chemistry in a Drop.

-International Ion Chromatography Symposium, Santa Clara, CA. September. A Portable Ion Chromatograph.

-Dow Chemical Company, Freeport, TX. September. Application of FIA In the Chlor-Alkali Industry. Measurement of Hydroxide, Chloride, Hypochlorite, and Chlorate in Chlor-alkali Cell Effluents and Measurement of Gaseous Chlorine.

-Transgenomic, Inc., Omaha, NB. October. Dasgupta Laboratory Smorgasboard.

-New Mexico Institute of Mining and Technology, Soccoro, NM. October. Analytical Chemistry in Drops and Films.

-Pacific Conference on Chemistry and Spectroscopy, Los Angeles, CA. October. Automated Measurement of Aerosol Composition.

-Dionex Corporation, Sunnyvale, CA. October. Proton Chromatography.

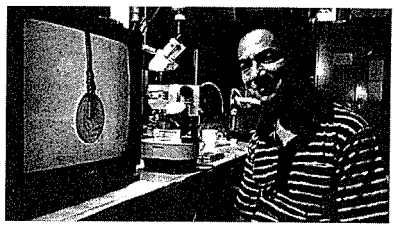
-Los Alamos National Laboratory, December. Solid State Detectors for Chemical Process Analysis.

In January, 1997, Professor Dasgupta testified as an Expert Witness for Hoechst-Celanese Corporation which brought a lawsuit against British Petroleum at the UK Royal High Courts of Justice for patent infringement. He was grilled for three days on the stand but in the end, the court ruled in favor of Hoechst-Celanese on all counts. It made the first page of the London Financial Times: the initial estimates of damages to be awarded being in excess of 130 million dollars, the largest in British legal history in a patent lawsuit. This case, for smaller stakes, has been heard previously by the US Circuit Court of Appeals and before that, the Federal District Court in Galveston where Dr. Dasgupta also testified, a jury verdict also went in favor of Celanese. It was hardly a surprise that when the same case was filed in Korea, this time against BP/Samsung, a team of Korean lawyers descended on Lubbock, along with their expert witness, to be advised by Dr. Dasgupta! He must have given them good advice because they won in Korea as well!

Sandy was appointed as an Editorial Advisory Board Member of *Analytical Chemistry* (A pages) and the *Journal of Microcolumn Separations* in 1997. He Continues as an editorial board member on *Analytica Chimica Acta*, *Atmospheric Environment*, *Journal of Process Control and Quality*, and *Talanta* .

Sandy was awarded (August 26, 1997) US Patent 5,660,703 for his development of "Apparatus for Capillary Electrophoresis having an Auxiliary Electroosmotic Pump".

Dr. Dasgupta organized and chaired the International Ion Chromatography Symposium I(IICS' 97) in Santa Clara, CA with over 300 attendees (including two National Academy Members) from 30 countries. The meeting, the 10th in this series, was acclaimed to be the best one ever.



Chemistry in a Drop: *Sandy's Picture as it Appeared in the "Laboratory Profile" Section of the A Pages of Analytical Chemistry in August of 1995.*

David B. Knaff attended the Western Regional Photosynthesis Conference in Pacific Grove, CA on January 8, 1997 and presented "Thioredoxin-Dependent Regulation of Chloroplast Metabolism". He presented "Ferredoxin-Dependent Plant Enzymes" at the Univesity of Missouri-Rolla on February 17, 1997, University of California-Riverside on February 25, 1997, and the University of Arizona on February 10, 1997. On September 6-13, 1997, he presented "Genes Encoding Light-harvesting, Reaction Center and Cytochrome Biogenesis Proteins in *Chromatium vinosum*" at the Ninth International Symposium on Photosynthetic Prokaryotes, in Vienna. Dr. Knaff is on the Board of Directors of the Texas Tech Center for the Interaction of Science and Humanities.

Patricia A. Metz was appointed to the Board of Trustees of the ACS Examinations Institute.

Stéphane Quideau presented an invited lecture, "Phenol Oxidation in Natural Products Chemistry" at the Institut du Pin, University of Bordeaux I, France in 1997.

Edward L. Quitevis presented two invited lectures in 1997. On April 4, 1997, he presented "Reorientation and Intermolecular Dynamics in Liquids" at New Mexico State University's Department of Chemistry and Biochemistry. On November 20, 1997, at the Department of Chemistry at Kansas State University, "Ultrafast Studies of Reorientational Dynamics in Liquids" was presented. "Structure and Intermolecular Dynamics of Liquids: Femtosecond Optical Kerr Effect Measurements in Neat and Binary Mixtures of Nonpolar Fluorinated Benzenes" was submitted to the Gordon Conference on Chemistry and Physics of Liquids in Holderness School, Plymouth, NH on August 3-8, 1997.

Richard L. Redington attended the 52nd International Symposium on Molecular Spectroscopy, June 16-20, 1997 at Ohio State University and presented "Ar Matrix Trapping Sites for Cyclobutadiene". On August 2-7, 1997, he traveled to Spital am Pyhrn, Austria and presented a poster at the International Conference on Chemistry and Physics in Matrices, "MO Study of Cyclobutadiene Complexes and Argon Matrix Trapping Sites". Dr. Redington also presented a poster, "Van der Waals Contact and Asymmetry of the Tunneling PES of Cyclobutadiene" at the Gordon Research Conference on Moelcular Electronic Spectroscopy and Dynamics at Queen's College, Oxford, England.

G. Wilse Robinson presented a talk, "Water: The Most Important But Least Understood Material" to the Department of Chemistry, University of California, San Diego on May 20, 1997 and to the Department of Chemistry, University of California, Los Angeles on May 28, 1997. He also presented "A Molecular-Level Understanding of Liquid Water from the Bottom Up" on September 25, 1997 to the Department of Chemistry, University of Michigan.

Henry J. Shine went to the University of Texas Arlington on May 2, 1997 and presented "Structure and Chemistry on 5-(Alkyloxy)thianthreniumyl Perchlorates" and then presented the same talk in July 1997 in Louvain la Neuve, Belgium at the 6th European Symposium on Organic Reactivity. Dr. Shine has been selected as an Advising Scientist to Project Dragonfly, a magazine for young investigators, under the auspices of the National Science Teachers Association.

We're in the Money: New Grant and Monetary Support

Richard A. Bartsch was awarded $320,000 for "Metal Ion Complexation by Lariat Ethers and Their Polymers" by the Department of Energy; $363,500 for "New Anion-Exchange Resins for Improved Separations of Nuclear Materials" by the Department of Energy; and $72,000 for "New Polymers and Extractants for Plutonium" by the Amarillo National Resource Center for Plutonium.

Dominick Casadonte was awarded $69,958 from the Texas Higher Education Coordinating Board Advanced Research Program for "Synthesis and Characterization of Cu(I) Metallopolymers".

Stéphane Quideau was awarded $111,000 for "Orthoquinone Monoketals in Natural Products Synthesis" by the Robert A. Welch Foundation.

Edward L. Quitevis was awarded $111,000 from the Robert A. Welch Foundation for "Femtosecond Nonlinear Laser Spectroscopy of Liquids".

G. Wilse Robinson was awarded $156,000 from the Robert A. Welch Foundation for "Interfacial Water"

Donations which came in for various and miscellaneous purposes include:

-$100 for equipment purchases, Nihal U. Obeyesekere

-$100 for wine making in the basement of the Chemistry Dept., Marque Hunter (ah, those were the good ol' days...)

-$100, Ron Foster

-$50, K. T. Dockray

-$50, John and Stacy Cahak

-$50, Mr. and Mrs. John H. Crow

Thank you so much for your generous support!

Products in High Yield: Alumni News

CECIL PINKERTON (B.A. 1942). His daughter Amy is editor at Pacific Sas and Electric Co. in San Francisco. His eldest daughter, Cecilia has her own psychology counseling service in Tampa, FL. He is a great-grandfather — Jocelynn Benton was born April 12, 1996. He serves as an epidemiologist to the Department of South Florida Environ Health Studies, Dr. Dean F. Martin, Head. He married Eleanor Wilbourne in 1947.

GEORGE T. BURRESS (B.S. 1949) wrote to ask for JOHN H. and BILLIE MAY COHEA CROW's address. He also mentioned that he was retired from Mobil Chemical Co. R&D in petroleum research using proprietary Mobile zeolite catalysts. "I obtained the basic patents in xylene isomerization and benzene alkylation with ethylene. Both of these are now used world wide. Other patents of mine were not quite as monetarily successful."

EUGENE L. GERRY (B.S. 1950) is enjoying retirement with four married children and nine grandchildren.

KARL T. DOCKRAY (B.S. 1957) wrote, "I owe my medical degree to Drs. Dennis and Stewart who gambled that this student, not very able at Texas Tech chemistry, might be able to squeak through graduate school. In addition, Drs. Shine, Rekers and Goodwin instilled a respect for meticulous detail and dogged persistance. To them all, please let me dedicate an award forwarded to me for some innovations in medical management and computing."

RONNIE E. FOSTER (B.S. 1965, M.S. 1966) joined Rohm & Haas immediately upon graduation from Tech and was still there in 1995. He wrote that he "enjoyed articles [last Test Tube] about Dr. Adamcik (I had him for organic in '62-'63) and Dr. Wilde (he was on my thesis committee in '66). It is frightening that this was 30+ years ago.

JUDITH ANN CREASY (B.A. 1967) writes that she has enjoyed working in Chemistry since her graduation in 1967. "I have worked in Medical Research, Environmental Chemistry, Medical Device Chemistry and, most recently, Pharmaceutical Chemistry."

RICHARD W. HARRAL (B.S. 1964, M.S. 1967) wrote that after leaving Tech in 1966 he worked for DuPont and in 1988 transferred to the Savannah River Site, DOE's nuclear weapons production facility. Now, working as a Westing-house Anniston Plant Manager in Alabama, he is involved in eliminating chemical weapons. He said his reasons for writing were threefold. "First, I want to thank the dedicated faculty at Texas Tech and particularly the Chemistry Department Faculty who saw to it that I got a first rate education, often in spite of my best efforts to cheat myself by not taking full advantage of what was offered." Secondly, "that one's career may follow a path quite different from one's expectation upon graduation. Only once did I actually do any work directly related to IR spectroscopy and only for a short time did I work in R&D." Thirdly, "Dr. Wilde, Dr. Shine, Dr. Draper, Miss Stewart and Miss Marie Miles (English Department) whether or not they knew it at the time, influenced me in ways that are now clear with 30 years of hindsight. They really did make a difference. What [they] showed me by example was how to think, how to approach my work, and the difference between meeting high standards and doing just enough to get by. To these people I owe a special thanks."

GERALD (GERE) EARL GAIGE (B.A. 1968) began a career as a real estate appraiser after serving five years as a USAF jet instructor pilot. Currently he is working as a consultant to the U.S. and Russian governments in privatizing commercial land in Russia.

JERRY MULLINS (B.A. 1968) was selected Outstanding High School Chemistry of Teacher and receipent of the Werner Schulz Award in 1995.

JAMES (JOE) H. COX (B.A., 1971) has a new title as Sr. Technical Services Advisor, Polypropylene.

SUNG NAK CHOI (Ph.D., 1973) is Professor in the Department of Chemistry at Chungnam National University in Taejon, South Korea.

KYONGTAE KIM (Ph.D., 1975) is Professor in the Department of Chemistry at Seoul National University in Seoul, South Korea.

GERALD WALZEL (M.S. 1976) has retired from the U.S. Air Force (as Lt. Col.) but has been reassigned in Las Vegas, Nevada as Vice President of a Test and Evaluation Program under the Office of the Secretary of Defense.

JONG GUN LEE (Ph.D., 1978) is Professor in the Department of Chemistry at Pusan National University in Puson, South Korea.

STEVEN EDWARD BOYNTON (B.A. 1980) survived the Delta Airlines 727 crash in 1988, reevaluated his life, went to medical school, and graduated from Texas Tech University School of Medicine in 1995. He went on to start a residency in Amarillo in Family Practice.

THOMAS K. HAYS (B.S., 1980) is now working for IDUN Pharmaceuticals in San Diego, CA as the new Section Head responsible for Process Chemistry.

IBRAHIM YILMAZ (Ph.D., 1980) is working for Fako Ilaclari A.S. in Istanbul, Turkey.

Colonel IL-WOO YANG (M.S., 1979; Ph.D., 1981) is a faculty member of the Department of Chemistry of Korea Military Academy in Seoul, South Korea.

ROBIN L. COOPER (B.S., 1983) spent the summer of 1994 at the Korea University Medical School where he initiated and taught an intensive three week hands-on neurophysiology workshop. "Now I feel that I have paid back to the Korean community all the help and encouragement that I had received from my Korean TA's while at Texas Tech. Thanks go to WOO YOUNG JEONG and HAESUN KANG (Hellen) BAEK (Dr. Holwerda's Ph.D. students) and to DR. KANG (Dr. Bartsch's Ph.D. student)."

GWI-SUK HEO (Ph.D., 1983) is Group Leader of the Organic Analysis Laboratory of Korea REsearch Institute of Standards and Science (KRISS) in Taejon, South Korea.

SANG IHN KANG (Ph.D., 1983) is a Senior Technical Staff Member of the Process R&D Group of Henkel Corporation in Ambler, Pennsylvania.

YUNG LIU (Ph.D., 1983) is the Deputy Process Engineering Manager for MOS Memory Operations in the Alpha-TI Semiconductor Joint Venture Project at Texas Instruments Inc. in Dallas, Texas.

HERBERT MUNSTERER left Tech in 1983 and became a patent lawyer specializing in chemistry, having passed the German Patent Law Exams and the European Patent Law Exams. He married HEIDI HANSSEN (1984) and have been in Munich since then. At the time he wrote in 1996, they had a two-year-old daughter.

KOON HA PARK (Ph.D., 1983) is Professor in the Department of Chemistry at Chungnam National University in Taejon, South Korea.

SONJA B. (POLLARD) KRISTIANSEN (B.A., 1985) finished her graduate fellowship in reproductive endocrinology at Baylor University in 1995 and did her residency in OB/GYN at Peter Smith Hospital in Fort Worth.

BYUNG-KI SON (Ph.D., 1985) is Director of the Dyestuffs Research Laboratories of LG Chemical Ltd. in Ulsan City, South Korea.

DON O. HENDERSON (Ph.D., 1987) is the Director of Chemical Physics Laboratory at Fisk University, Nashville, TN. He was invited to join the editorial advisory board for "Materials Science Foundation", which publishes five monographs a year on "In-Depth Reference for Fundamental Concepts and Phenomena" in materials science.

SHINTANI HIDEHAUR (Postdoc 1987) is an editor of a book entitled *Analytical Application of Capillary Electrophoresis*, published by Blackie and Academic Publication, United Kingdom.

BAL RAM SINGH (Ph.D., 1987) was tenured to Associate Professor at U. Mass-Dartmouth in September 1995 and received the "Scholar of the Year" award in December 1995.

KELLY G. CASEY (Ph.D. 1988) is the Chair of the Physics Department at Yakima Valley Community College in Yakima, Washington.

KEVIN GRAY (Ph.D. 1988) has accepted a position as a research group leader with Industrial BioCatalysis, Inc. in San Diego, CA.

JOE P. YOUNG (M.S. 1989) finally made his way back home to the Pacific Northwest, got married, but no kids yet (as of the last newsletter anyway). He is working for Air Liquide as QA Manager.

JEFF SEALE (B.A. 1988; Ph.D., 1992) is now a biochemist in Disease Control Group at Monsanto in St. Louis. His research will focus on engineering agricultural crops for increased resistance to disease.

LARRY BRATTON (M.S., 1989), his wife Teresa, and his daughter Caitlyn have moved to Whitmore Lake, MI where Larry has a position with Parke Davis Pharmaceutical synthesizing new drugs for treatment of inflammatory diseases.

JOE MCDONOUGH (Ph.D., 1990) has a new position with Ilex Oncology in San Antonio.

TOM ROBINSON (M.S., 1987; Ph.D., 1991) is a member of the permanent research staff at Los Alamos National Laboratory.

WILLIAM EDGEMOND (Ph.D., 1992) wrote in May 1995 that the reason he had not, as of that date, finished several papers he was coauthoring was because his son was born on May 23rd. While he provided the vital statistics (9 lbs 12 oz, 21 inches), he didn't include the name!

JOHN KNOBELOCH (M.S., 1992) is making pharmaceuticals with Schweizerhall Development Company in Greenville, SD.

JONG CHAN LEE (Ph.D., 1992) has been promoted to Associate Professor in the Department of Chemistry at Chung-Ang University in Seoul, South Korea.

MARTY UTTERBACK (Ph.D., 1992) continues in his position with Nalco/Exxon Energy Chemicals, L.P. in Sugarland, TX.

JONG SEUNG KIM (Ph.D., 1993) has been appointed Assistant Professor in the Department of Chemistry of Konyang

University in Chungnam, South Korea.

DERRICK MCGOWEN (B.S., 1993) is a Project Manager for Lambert and Associates, Inc. in Roanoke, TX.

ROSEANNE WOO (1993) graduated from law school in May 1996 and took the bar exam in July 1996 and passed. As of December 1996, she has expanded her role from product development to business management at Monarch Marking Systems and was planning on opening a solo practice with emphasis in the areas of business law.

Major CONNIE DUNN (Ph.D., 1995) is Chief of the Quality Assurance Branch at Lackland Air Force Base in San Antonio, TX.

QIANG ZHAO (Ph.D., 1995) has a new position with AlliedSignal-Advanced Microelectronics Materials Division in Sunnyvale, CA.

HARI MANDAL (Ph.D., 1996) is working for Baker Petrolite Corproation in Midland, TX.

YIE-LANE CHEN (Ph.D., 1996), after completing two years as a postdoc in the Department of Biochemistry at Purdue, has accepted a biotechnology research position in his native Taiwan with Natural Flavors International, Inc.

JAY COLLIER (M.S., 1996) has a position with Roche Bioscience in Palo Alto, CA.

MARK ELEY (Ph.D., 1996) is working as an environmental chemist with METCO Environmental in Ft. Worth, TX.

HONG-SIK HWANG (Ph.D., 1996) has joined the research group of Professor Daryle Busch at the University of Kansas as a Postdoctoral Associate.

SHERYL IVY (M.S., 1996) is performing organic synthesis at Sigma Chemical in St. Louis, MO.

ARCHITA SENGUPTA (M.S., 1996) is now a Ph.D. student in biophysical chemistry at the University of California, Santa Cruz.

GARY CORSON (Ph.D., 1997) is currently a visiting Assistant Professor at New Mexico Highlands University.

LONGGUI ZHONG (M.S., 1997) is working as a polymer chemist with IM Clipper Corporation in Nacogdoches TX.

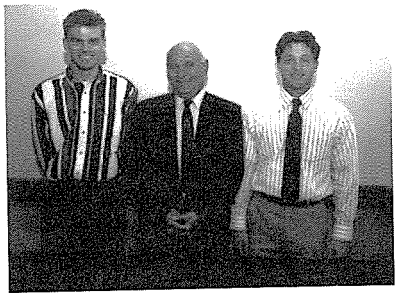
XIAOMING YI (Ph.D., 1997) is currently a postdoctoral researcher in the Department of Cell Biology and Neorology, UT Southwestern, Dallas.

Tech Students Garner Barry Goldwater Scholarships

The Barry M. Goldwater Scholarship and Excellence in Education Program was established by Congress in 1986 to honor Senator Barry M. Goldwater and to provide a continuing source of highly qualified scientists, mathematicians, and engineers by awarding scholarships to college students who intend to pursue careers in these fields. The scholarships are considered to be the most prestigious undergraduate awards of their kind in the fields of science, mathematics, and engineering. In recent years, Texas Tech students, and especially students majoring in chemistry or biochemistry, have been highly successful in earning Goldwater Scholarships.

1995: David Bessier (Chemistry)
E. Brooke Phillips (Biochemistry),
Janel Short (Chemistry),
Amanda Wright (Cell and Molecular Biology)
1996: Tom Kerr (Cell and Molecular Biology)
Richard Lombardini (Chemistry)
Lara Wiggins (Cell and Molecular Biology)
1997: Darin Bell
Anthony Davis
1998: Cynthia L. Johnson (Biochemistry)
Tarra M. Wright (Biochemistry)

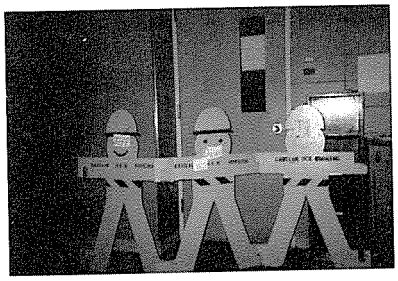
Texas Tech Ranks #1 in total number of Goldwater Scholarships among all institutions in Texas and #2 among Big Twelve institutions during this period! In 1995, Texas Tech was one of seven institutions in the country to receive the maximum of four Goldwater Scholarships! We have a lot to be proud of these students and the role of the chemistry department in their development into first-rate scientists.



AuH$_2$O: *1996 Goldwater Scholars Thomas Kerr(left) and Richard Lombardini at the 1996 Departmental Awards Banquet.*

Graduate Student Follies

Fire-Breathing Dragon? *George Harakas (Ph.D., May, 1996) Shows That He's More Than Full of Hot Air by Spewing Liquid Nitrogen. NOTE: This Activity Is NOT Sanctioned By The American Chemical Society (Eh, George?)*



Graduate Students At Work: *Some of Our Harder Working Graduate Students Try to Prevent Intrusions During Some Crucial Experiments. We Thought Their Expressions Were a Little Wooden, But The Students Assured Us That These Barriers Were Actually Modeled After Some of the Faculty During Final Exam Time!*

Scholarships and Awards

It is a pleasure to acknowledge the generous support of our scholarship programs by Phillips Petroleum Company and the Celanese Chemical Division of Hoechst in 1998. Such contributions allow us to recognize and encourage our excellent undergraduates. In addition to our industrial supporters, funds for scholarships are available from the interest generated by the endowment given to the department many years ago by Dr. and Mrs. Joe Dennis and Joe Goodwin. Interest from funds established in memory of Samuel Hunt Lee and Walter J. Chesnavich, two of our late colleagues, are used to fund awards for the outstanding organic chemistry student and the outstanding physical chemistry student for the year. These scholarships are awarded at the annual chemistry and biochemistry banquet, co-sponsored by the South Plains Local Section of The American Chemical Society.

Samuel Hunt Lee Memorial Award
Jeremy Dalton Angela Mote

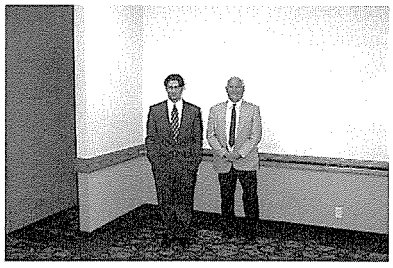
Walter J. Chesnavich Memorial Award
Matthew Belford Kyle Caldwell

Jeannette and Joe Dennis Scholarships
Joseph Bowles Stephen Hagedorn
Audra McAteer

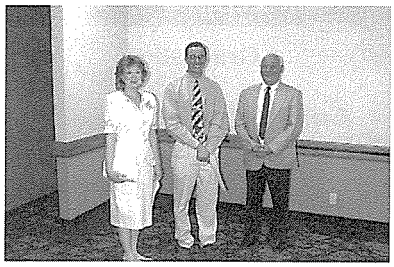
Robert Goodwin Scholarships
Jaime Haberer Stephen Lee
Amy Sorrells Lisa Walter

Phillips Petroleum Scholarships
Tamzid Farhat Cynthia Johnson
Lance Nesbit

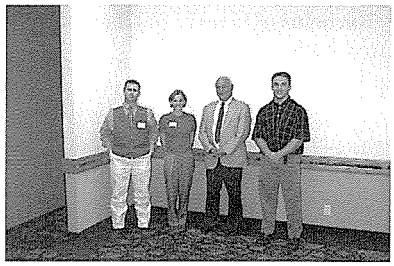
Celanese Scholarships
Denise Butler Paula Noe
Richard Walulu Tarra Wright



Max Roundhill with the 1998 Walter J. Chesnovich Memorial Award winner, Mathew Belford.

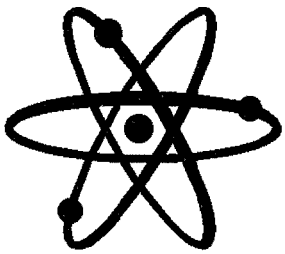


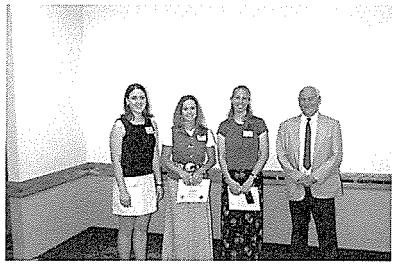
Max Roundhill with the 1998 Samuel Hunt Lee Memorial Scholarship Award winners, Angela Mote and Jeremy Dalton. Jeremy's mother, Mrs. Lisa Dalton, won the award for Outstanding High School Teacher, sponsored by the A CS South Plains Local Section.



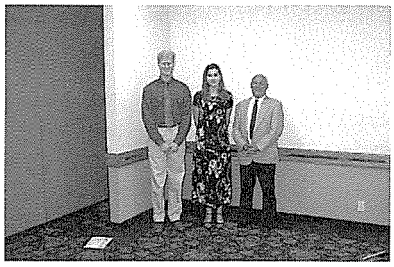
Max again doing the honors with the 1998 Jeannette and Joe Dennis Scholarship winners, Joseph Bowles, Audra McAteer, and Stephen Hagedorn.

Two of the New Officers for the ACS-SA for 1998. Abbie Davalos (President) and Carrie Bates (Treasurer), Posing With You-Know-Who.

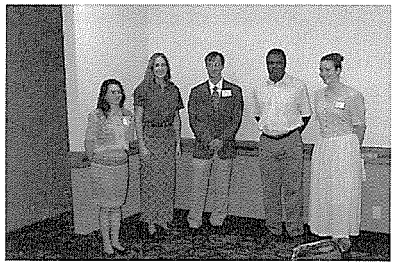




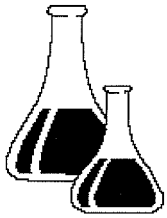
Three of the 1988 Robert Goodwin Scholarship winners, Amy Sorrells, Jaime Haberer, and Lisa Walter, pose with our department chair.



Max Roundhill poses with the 1998 two of the 1998 Phillips Petroleum Scholarship winners, Lance Nesbit and Cynthia Johnson.



Robby Dildy (center) from Celanese poses with the 1998 Celanese Scholarship winners, Paula Noe, Tarra Wright, Richard Walulu, and Denise Butler, this time without our esteemed department chair.



Transition States

• Graduations

May 1995
Larry Alan Fish
Lisa Michele Stephens
Keeli Lynnette Stumbo

August 1995
Michael Gordon Kinney

December 1995
Mindy Beth Chilton
James Patrick Leif
James Lee Williams

May 1995
Myriam Maria Matos Gomez
Nichole Mylette Jackson
Liann Oh
Christopher Joe Roden

August 1995
Ami Cathleen Foster

December 1995
W. Von Clendenen, Jr.

May 1996
Travis Own Bush
Timothy Shawn Mooring
Stephanie Baxter Sharp
Vikki Lee Van Duzee

May 1995
Richard Bui
Darin Wayne Chase
Amanda Denise Malouf
Brian Scott McCourt
Derrick Rodney Mott
Phuong Binh Nguyen
Kristi Keilberg Rushin
Kenny Clyde Thompson

May 1996
Clay Edward Allred
Kathryn Alene Beck
Patti Lynn Burk
Brian Michael Dalak
Aleksei Viatcheslavovitch Gribenko
Janel Diane Hopper
Sundus Amina Lodhi
Elizabeth Brooke Phillips
Jacobo Sanchez
Tamara Joanne Slosser

Bachelor of Arts in Chemistry

May 1996
Charles Kirk Mankin

August 1996
Jimmy Don Threet

December 1996
Walter Peter Lazdowski, Jr.

May 1997
Donnie Ray Carrasco
Yen Lee
James Eric Schultze

Bachelor of Science in Chemistry

August 1996
Amy Marie Appedole

December 1996
Mohammed Ali Taha Ayoub
Jeffrey James Miller
Jon Patrick Rigby
Sharon LaVon Williams

May 1997
Tri Van Dang
Angela Christine Gwyn
Stephen Brent Hester
David Peter Kippie
Kimberly Annella Rosaaen

Bachelor of Science in Biochemistry

August 1996
Christine F. Hainey
Wilson Slaid Jones
Bradley Corbett Riek
Christopher Loy Scheller

December 1996
Leon Austin Dailey
Thomas Colin Pharr

May 1997
John Robert Collette
John Michael Mansfield Griffin
Mark Douglas Jenkins
Bronwen Nan Mathis
Lindsey Kaye Walker
David Michael Wheeler

August 1997
Stacy DeLyn Abernathy
Brian Kent Pellam

December 1997
Jay Chad Bullard
Gene David Cathey

May 1998
Suhair Maqusi
Sergio Hil Ortiz
Jeffrey Leigh Snider
Timothy David Thompson

August 1997
Terry Allen Nemec

December 1997
Karl Headley Hoffman, II
Kimberly Colleen Kehoe

May 1998
Aaron Dean Albracht
Robert Bruce Champlin, Jr.
Thomas Clarence Collier
Richard Matthew DiCarlo
Jason Michael Montgomery
Jeffrey Leigh Snider

August 1997
Michael Robert Wilson

December 1997
Christopher Alan Hull
Young Yacob Shea

May 1998
Christopher Robert Adair
John Bradley Applewhite
Jason Edward Burns
Thomas Kevin Cook
Melissa Rae Fortner
Thuan Binh Nguyen
Lauri Ann Peak
Marsha Renee Perales
Andrea Kamini Sanchara
Stuart Jarrel Waida
Michael Ray Wallace

Bachelor of Arts in Biochemistry

May 1995
Brian Allen Bradley
Lawrence Brady Field
David Michael Savage
Jill Ann Shackelford
J. Emery Swenson
Christopher Harris Van Cleave

August 1995
Brian Adam Hajovsky

May 1996
Nathan Vincent Clark

December 1996
Armando Ortega Gomez
Devon Marcus Rye
Brian Wayne Sanderson

August 1997
Robert Burke Noel

December 1997
David Alan Barkley

May 1998
Seung Mo Kim
Robyn Dana Stewart

Master's Degree in Chemistry

August 1995

Tracy Renee Bryans (Physical-Dr. Quitevis, "Raman Studies of Sol-Gel Confined Methyl Iodide")
Yi Liu (Organic-Dr. Bartsch, "Lariat Ethers in Silver-Selective Polymeric Membrane Electrodes")
Steven Eric Twaddle (Inorganic-Dr. Mill, "Synthesis of Multidentate Ligands and Their Coordination to Metals")
Ren Zheng (Organic -Dr. Bartsch, "Complexing Agents for Metal Cations and for Anions")

December 1995

Tung-Lam Eric Cheung (Organic-Dr. Headley, "Substituent Effects on the Tautomerization of Amino Acids")
Connie Delle Cogdell (Chemical Education-Dr. Metz, "Evaluation and Observation of Teaching Assistants in Discovery Lab Courses")
Juan Lu (Inorganic-Dr. Casadonte, "Photophysical and Photochemical Studies of Photo-Active Copper(I) Complexes")

May 1996

James Johnston Collier (Organic -Dr. Bartsch, "Synthetic Hosts for Neutral Molecules and Metla Ion Guests")
Sheryl Nichole Ivy (Organic -Dr. Bartsch, "Synthesis of Crown and Lariat Ether Compounds")
Yanghong Li (Biochemistry-Dr. Nes, "Stereochemical Studies on the Metabolism of Sterols by *Saccharomyces cerevisiae* Strain GL7")
Mrinal Rohit Paranjape (Organic-Dr. Walkup, "Studies of Interactions of Streptolysin O with Membrane Sterols")
Mark Christopher Porter (Chemical Education-Dr. Metz, "Curriculum Development and Implementation for Physiological Chemistry Laboratory (CHEM 3402): An Open-Ended Laboratory Approach")

August 1996

Coleman Clayton Chasteen (Analytical-Dr. Dasgupta, "Automated Measurement of Aerosol Acidity")
Dawn Marie Chitty (Organic -Dr. Walkup, "Progress Towards the Synthesis of Plakinamine B")
Leo James Corley (Organic -Dr. Bartsch, "Immobilization of Lariat Ether Carboxylic Acids on Polystyrene")
Bradley Playford Glover (Biochemistry-Dr. Shaw, "Enzymology of Metallo-B-lactamases")
Erin Elizabeth Hallman (Inorganic-Dr. Casadonte, "Oxidative Destruction of Organic Contaminants Utilizing Ultrasound")
Archita Sengupta (Physical-Dr. Quitevis, "Raman Studies of Iodine-Doped Poly(VinylAlcohol) Thin Films")

December 1996

Peter Eugene Wagenseller (Organic-Dr. Birney, "Pseudopericyclic Reactions")

May 1997

Xue-Hui Jin (Organic -Dr. Walkup, "Synthetic Studies on a Model System for the Spirobicyclic Ring System of Oscillatoxin D")
Longgui Zhong (Organic -Dr. Bartsch, "New Polymers for Metal Ion Chelation")

August 1997

Youwen Mo (Analytical-Dr. Dasgupta, "Investigations in Capillary Liquid Chromatography")

December 1997

Tyson M. Swiftney (Organic-Dr. Walkup, "Synthesis of L-(Phenyldimethylsilyl)alanine for its Incorporation into Analogs of the Neuropeptide Substance P")
Xiaolian Xu (Organic-Dr. Birney, "Chemoselectivity in Pseudopericyclic Reactions of Acetylketene")

May 1998

Clay Edward Allred (Analytical-Dr. Menzel, "Rare Earth Based Latent Fingerprint Detection")
Michael Patrick Houlne (Analytical-Dr. Bornhop, "Conductometry and Impedance Spectroscopy of Micellar Solutions")

Ph.D. Degree in Chemistry

May 1995

Sang-Rok Do, (Organic-Dr. Shine, "One-Electron Oxidations and Reductions of Organomercurials and Organotins")
Youngchan Jang (Organic -Dr. Bartsch, "Synthesis of Lariat Ethers With Proton-Ionizable and Non-Ionizable Side Arms and Their Acyclic Analogues")
Christopher Michael Stetson (Organic -Dr. Bartsch, "Synthesis and Study of Monotopic and Ditopic Cyclophane Hosts for the Complexation of Neutral Molecules")
Qiang Zhao (Organic -Dr. Bartsch, "Synthesis and Metal Cation Separation of Chelating Polymers Containing Crown Ether Units")

August 1995

Connie Dee Dunn (Organic -Dr. Bartsch, "Reverse Direction Capillary Electrophoresis: Theory and Application")
Shaorong Liu (Analytical -Dr. Dasgupta, "Development and Applications of Capillary-based Analysis Systems")
Gary Alan Tarver (Analytical -Dr. Dasgupta, "Mapping Fugitive Sulfur Emissions From Texas Oil and Natural Gas Production Fields")
Gregory Roland Unruh (Organic-Dr. Birney, "Stereochemical and *Ab-Initio* Studies of Multiple Photon Infrared Initiated Decarbonylation of cis-2,5-Dimethyl-cyclopentenone")

December 1995

Ahmed Abdulla Abbas (Analytical -Dr. Shelly, "Axial Illumination Based Optical Detection in Micro-LC")
Jiong Chen (Organic-Dr. Marx, "The Total Synthesis of (-)-Rishitin"
Newton Parr Hilliard, Jr. (Biochemistry-Dr. Shaw, "Structure-Function Relationships in Metallo-Beta-Lactamase of ^Bacillus cereus^5/B/6")

May 1996

George Nick Harakas (Inorganic-Dr. Whittlesey, "Synthesis of Compounds Containing Group 13 and Transition Metal Elements")
Hanghui Liu (Analytical -Dr. Dasgupta, "Studies in Automated Microanalysis")
Aftab Ahmed Siddiqui (Analytical -Dr. Shelly, "Amperostatic-Potentiometric Detection in Micro-LC")
Mary Selvi Vedamuthu (Physical-Dr. Robinson, "The Anomalous Properties of Liquid Water Explained by a Mixture Model")

August 1996

Yie Lane Chen (Biochemistry-Dr. Knaff, "Characterization of the Cytochrome bc_1 Complex *pet* Genes from *Chromatium vinosum*")
Michelle Marlene Dose (Biochemistry-Dr. Knaff, "The Effects of Chemical Modification on Spinach Nitrite Reductase")
Hari Das Mandal (Organic-Dr. Shine, "Thianthrene Cation Radical Induced Reactions of Semicarbazones and Acylhydrazones")
Howard Mark Merken (Organic-Dr. Marx, "Synthetic Studies of Occidenol and Synthetic and Kinetic Studies on Substituted Cyclohexadienones")

December 1996

Mark Dwight Eley (Organic -Dr. Bartsch, "Metal Ion Complexation and Separation by Crown Ether Compounds")
Hong-Sik Hwang (Organic -Dr. Bartsch, "Synthesis of Novel Acyclic and Cyclic Polyether Ligands")
Thomas Richard Johnston (Inorganic-Dr. Whittlesey, "The Synthesis and Study of Group 13 Elements Transition Metal Coplexes")
Sew Fen Leu (Biochemistry-Dr. Harman, "In Vitro Characterization of cAMP Receptor Protein Mutated at Position 127")

May 1997

Chul Hee Cho (Physical-Dr. Robinson, "Experimental and Theoretical Studies on Water")
Darcey Glen Wayment (Inorganic-Dr. Casadonte, "Variable Frequency Sonochemistry")

August 1997

Brenda Friesenhahn Kahl (Biochemistry-Dr. Reid, "Characterization of the Interaction of Substance P With its Receptor Using Substance P Analogs Containing Beta-Methyl Phenylalanine"
Jian Ping Lu (Organic -Dr. Bartsch, "Metal Ion Complexation, Extraction and Transport By Crown and Lariat Ether Compounds")

December 1997

Gary E. Corson (Biochemistry-Dr. Knaff, "Molecular Biology of Photosynthetic Bacteria")
Jeffrey Dean Kahl (Organic -Dr. Walkup, "Synthetic Studies Related to the Marine Natural Product Oscillatoxin D")
Matthew Maurice Monzyk (Inorganic-Dr. Holwerda, "Characterization of Some Mu-Oxo Homonuclear Dimers Containing the Metals Iron and Manganese")

Bartholomew Wayne Neff (Organic-Dr. Birney, "Progress Toward a Novel Ortho-Functionalized Cyclic Phenylalanine Dipeptide")

Xiaoming Yi (Biochemistry-Dr. Shaw, "Probing the Structure and Reactivity of the *Bacillus cereus* 5/B/6 Metallo-Beta-lactamase Through Site-Directed Mutagenesis and Mechanism-Based Inactivation")

May 1998

Harvey Scott Bellamy (Analytical-Dr. Dasgupta, "Design of Miniature Flow Through Optical Detectors")

James Daryl Sweet (Inorganic-Dr. Casadonte, "Materials and Environmental Applications for Sonochemistry")

Wen Zhou (Biochemistry-Dr. Nes, "Synthesis of Sterol Biosynthesis Inhibitors and Metabolism of Isotropically Labeled Sterols by *Saccharomyces cerevisiae*")

• Promotions

Assistant to Associate Professor

1995

David M. Birney
Dominick J. Casadonte, Jr.
Gregory I. Gellene Allan D. Headley
W. David Nes

1996

Patricia A. Metz Dennis C. Shelly

1998

Darryl J. Bornhop

Associate to Full Professor

1997

W. David Nes

1998

Gregory I. Gellene
Edward L. Quitevis

• Faculty Leaving TTU

Patricia A. Metz is leaving the faculty after an eight year stint as General Chemistry Coordinator and Chemical Education Guru. Tricia's absence will be keenly felt. As the coordinator of General Chemistry, Tricia has turned the Gen Chem program into a well-oiled machine, servicing over 3,500 students each fall alone. She has been responsible for the administration of both the lecture and lab portions of the program. Tricia is extremely versatile, having taught a biochemistry course as well during her tenure here. She has been a valuable resource for the primary and secondary schools on the South Plains, and a number of the programs which are in place in the school districts in the area are due to her direct involvement. She also served as secretary for the local section of the ACS, and has run both the Chemistry Olympiad competition and the Welch Summer Scholars Program. Tricia will be heading to the University of Georgia at Athens to be part of a four-faculty team of chemical educators. We wish her the best and will sorely miss her presence.

• Deaths

ERNEST DEAN EVANS, died January 26, 1996. He was born on January 7, 1921 in Dallas, but shortly thereafter his parents returned to their native West Texas, where Ernest was raised. He received a degree in chemistry from Texas Tech in 1942, and then joined the Dallas Field Research Laboratory of Magnolia Petroleum. Magnolia was Mobil's predecessor in the Southwest. He retired from Mobil in 1983, after a 41-year career.

WELDON KOLB, died April 4, 1995. He graduated from Texas Technological College in 1937 with a bachelor of science degree in Chemistry and the University of Texas Medical School in 1941. He retired in 1992 after prqacticing medicine in the La Marque-Texas City area for 50 years. His daughter, Kathryn Kolb Johnson, wrote to us that he was " at that time the youngest Texas Tech graduate (his birthday was July 31, 1919). He died April 4, 1995, ever faithful to Texas Tech. My hope is that whoever reads this will love Texas Tech throughout his/her life as much as my father did."

ROBERT REKERS, died on May 10, 1995 from melanoma. As Henry Shine reports, "He was an early member of the analytical division, having joined the department in 1955. He and Margret Stuart, also now deceased, were the mainstay of the division's undergraduate teaching for years. Bob also taught general chemistry. He was the first associate chairman of the department, a position I received when I because chairman in 1969. Until then, the department was run single-handedly by Joe Dennis, who was head for 17 years and chairman for two. As associate chairman, Bob managed most, if not all, of the essential business of the department, particularly the schedules and TA assignments. During the planning of the building of our addition, when Joe Dennis was chairman, Bob was chairman of the building committee and also liaison officer during the planning and building of the addition. We owe to his hard work and his considerable knowledge of construction the fine building we have now. During his term as associate chairman and the construction of the building he had a full teaching load, too. He retired in 1987. The characteristic that stands out in my memory is his unceasing optimism. He never seemed to be fazed by adversity. When anything went wrong in the department or in the building phase, he would grin and say "we'll take care of it".

A TRIBUTE TO C.W. SHOPPEE
by R. Dwight Lundberg
(M.S., 1971, Ph.D. 1976)

I am Dr. Shoppee's only graduating student from his time at Texas Tech University. While I was a student, he gave me a gift of such importance that I feel that I should share it with others. My regret was that I was not wise enough to recognize the gift for its value at the time.

One morning, Dr. Shoppee asked that I bring my research notes to his office so that we could discuss the activities and results of recent weeks. I was in the process of laying out the descriptions and various sprectra and chromatographic results, when I said that one of the results was just what one would expect from acid-base arguments. Dr. Shoppee interupted me to say that he did not recognize what I meant by that phrase and would I please elaborate. I had course work over those arguments several semesters before, so I asked that I go to my lab to get my lecture notes. I would be much less likely to drop some aspect if I had the notes to guide me. Dr. Shoppee said that he had a meeting in about a quarter of an hour, so we could get together that afternoon. we agreed on a time in the early afternoon.

That afternoon, after taking a bit of time

to organize myself, I taught my major professor a lesson for two hours on those arguments. To be certain, he knew much of the chemistry involved, but not of the organization of those facts. On reflection later, I saw the deep conviction to the intellectual curiosity that could have a world-class chemist ask his very unconventional graduate student to teach him a new part of chemistry that he had not heard the arguments describing the theory.

In my own life since then, I have seen that it is a difficult task to lay aside my own authority to ask others that they teach me. These times have been a continuing call back to those days when I apprenticed myself not only in chemistry but also in honesty.

Margaret Stuart Reminiscences

I enrolled for freshman chemistry at Texas Tech the summer of 1958, a few weeks after graduating from high school. My only credentials for the course were a modest interest in science and a continuing obsession with pyrotechnics. Much of my adolescence had been spent formulating explosives in the garage and backyard. I had graduated rapidly from gunpowder to gun cotton and, ultimately, to the quintessential material for a budding explosives expert, nitrogen triiodide. I had seen a demonstration of nitrogen triiodide at the Engineering Show at Texas Tech when I was 1 4 years old and could not rest until I had mastered the technique of home manufacture. My adventure with explosives fortunately had deprived me only of a bit of high-frequency hearing, but had left me with intact digits and eyes.

The summer chemistry course of Professor Stuart was demanding both from a classroom and laboratory standpoint. Standard laboratory exercises lacked the glamour of creating explosives. Nevertheless, Professor Stuart seemed to find some redeeming qualities in me and inquired as to my future plans and anticipated major. I really had no well-defined study goals and was not certain what direction to take. Professor Stuart suggested the possibility of a premedical curriculum and continued to proselytize me during the summer of chemistry. One of the other students in the course that summer unabashedly declared to the world on every possible occasion that he was in fact a premed student and planned to be a doctor. Unfortunately, his hand-eye coordination was a bit lacking, and during the summer lab session he set what I believe must still remain a Texas Tech record of dropping and breaking three desiccators during a single semester of chemistry. I determined that if this person with his maldexterity was absolutely certain that he could become a doctor, perhaps there was hope for me also.

Subsequently, Professor Stuart asked me to serve as a laboratory assistant. We spent a considerable amount of time together, and I was always intrigued by her amazing ability to assess correctly students and their potential, as well as their genuineness. She kept a close watch on her premed students and was always aware of their academic triumphs and failures. She was demanding, but also absolutely fair. I recall one fateful afternoon when she and I were preparing reagents for an upcoming lab, and I carelessly gave her the wrong chemical that resulted in a violent reaction when it was mixed with an acid. Fortunately, neither of us was hurt. I immediately decided my chances of getting into medical school were slim-to-none after my chemical faux pas, and I began contemplating alternate career plans. Fortunately, Professor Stuart was amazingly calm about the episode and talked to me about the extreme importance of carefully reading all labels. This information has stood me in great stead, and to this day I remain obsessive-compulsive about double checking all medications I prescribe.

I am certain that there are literally hundreds of physicians who will remain permanently indebted to Margaret Stuart for her wise counsel and influential medical school recommendations. Professor Stuart was a college mentor for many Texas Techans who subsequently became caring and successful physicians.

I urge all of Margaret Stuarts former premedical students to join me in honoring her by contributing to the Margaret R. Stuart Medical Student Scholarship Fund.

Sincerely,
Dwain G. Fuller
B.A., 1962

Gene Poirot (B.S., 1959) writes,

How many Qualitative Analysis survivors remember the quotation she liked?

"Say not that I now see the thing I think I see."

Way back, when color change and precipitates were important tests for chemical reactions, she liked to use this quotation to warn students to be careful about drawing conclusions with insufficient data.

JOHN C. TRISLER, Ph.D., 1959, died in Ruston, LA on December 11, 1997. He was retired from Louisiana Tech University for one year were he was formerly Head of the Department of Chemistry and Dean of Arts and Sciences. Dr. Trisler was Dr. Shine's first Ph.D. student.

WESLEY W. WENDLANDT, an internationally known thermal analytical chemist passcd away on June 30, 1997. Dr. Wendlandt was born November 20, 1927. He received his B.S. degree from Wisconsin State University, M.S. and Ph.D. from the University of lowa. He then joined the faculty at Texas Tech University. He established a highly productive and internationally recognized program in thermal analysis and authored the definitive text on the subject. The University of Houston offered him the chairmanship of its Department of Chemistry, which Dr. Wendlandt accepted in 1966. He stepped down as chairman in 1972 but remained an active member of the faculty as Professor of Chemistry, teaching post graduate and undergraduate chemistry and con tinuing research. He retired from the University of Houston in 1991. He became the founder and editor-in-chief of *Thermochemica Acta*, a highly successful international research journal in thermal analysis, in 1969. At the time of his retirement as editor in 1993, he was honored by a reception in Amsterdam, The Netherlands, which was attended by international colleagues. He had published over 350 research papers and was a member of numerous professional and honor societies.

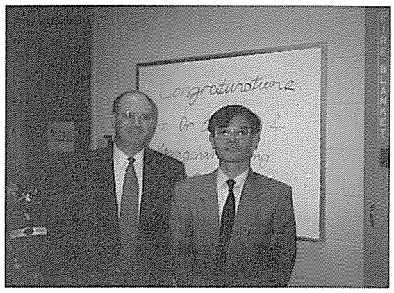
Contact Us By E-Mail!

In this electronic day and age it seems that everyone is E-mailing, Faxing, and Cellular Phoning everyone else. So, in our attempt to stay at the forefront of technology (its in our name, after all!), we would like to invite you to send us an E-mail message. These can be changes of address, articles you would like to include in the next *Test Tube*, whatever. Send your E-mail comments to:

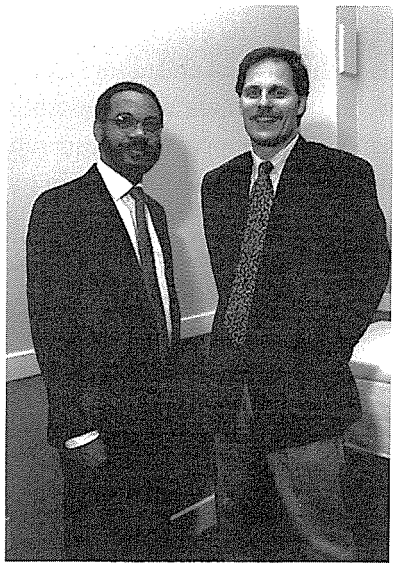
tkdjc@ttu.edu.

PHOTOCHEMISTRY

Its A Global Village: *David and Joyce Knaff Show Off Their Stained Glass City at The 1996 Departmental Christmas Party.*

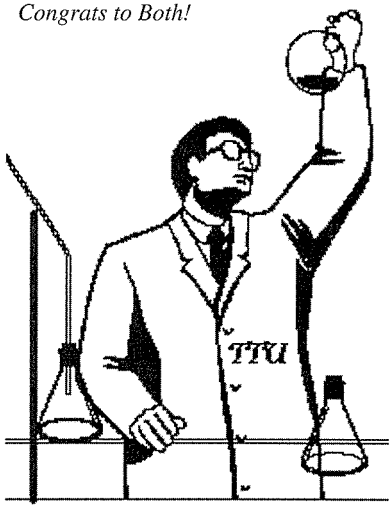


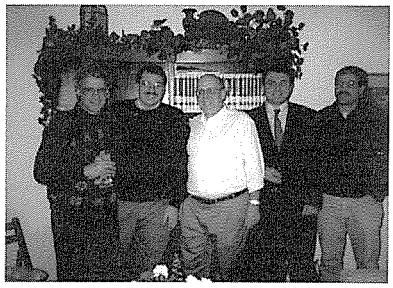
Number 25: *Dick Bartsch Poses With Youngchan Jang After His Ph.D. Defense. Youngchan is Dick's 25th Ph.D. Students. Congrats to Both!*



Outstanding Teacher: *Alan Headley Poses With Jeff Barrows, the 1996 Outstanding High School Teacher of the Year.*

Name That Picture: *Dick and Sophia Wild Pose With Wilse and Ellen Robinson During Dick's Retirement Party. A Picture of Texas Tech's Carol of Lights Was Given to Dick During the Festivities.*





A Bevy of Biochemists: *Our Esteemed Biochemistry Division. From Left to Right: David Knaff, David Nes, Robert Shaw, George Makhatadze, James Harman.*

Its A Boy!: *Sam Whittlesey and His Mother Charlotte(right) Graciously Pose With Betty Anderson During the 1996 Christmas Party.*

Salsa Anyone?: *Jane Bradley (left), Jennifer Dunfield, and Dahlia Guerra Serve Up Lunch Southwest Style During the New Graduate Student Reception in Fall, 1997.*

$$$: *Alan Headley Receives a $2,000 Check From Denise Phillips of Celanese Corporation in 1996. The money was used to Fund Undergraduate Scholarships.*

The Coinage Metals

Our department is, more than ever, dependent upon non-state sources of funding in the form of endowments and personal donations. The continued success of and improvement in our department depends upon the establishment of a stable endowment-based foundation. Would you please consider helping us in this crucial endeavor? Contributions in <u>any</u> amount would be welcome. As you can see from this issue, we are well on our way to establishing a class of students who are second to none in the country, but we need scholarship support and research and teaching equipment to retain these able students and to provide them with a first-class education in today's ever more sophisticated climate. Please consider helping Chemistry and Biochemistry at TTU as it strives to be one of the premier teaching and research departments in the United States and the world.

Donation Response Form

Enclosed please find a check, made out to "The Department of Chemistry & Biochemistry - TTU", with "Chemistry Department Endowment Fund" on the memo line, in the amount of $ _____.

_____This money will be placed in an endowment fund until enough money is available for the purchase of laboratory equipment. The specific items purchased will be determined by the faculty. The results of any such purchase will be reported in future issues of the *Test Tube*.

——This money should be used for scholarship purposes. The results of scholarships established will be reported in future issues of the *Test Tube*.

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E-mail Address: _____

Please return to: **Dominick J. Casadonte, Jr., Dept. of Chemistry & Biochemistry**
Texas Tech University, Lubbock, TX 79409-1061

Dear Family, We are Fine, How are You?

Please let us hear from you, whether it be a quick "hello," a lengthy epistle, or a cool note to correct my errors about you! It would be a tremendous help to us if you could help us update our information about you and that, in turn, would help you to be better informed about what's going on here at Tech. Please, at least, fill out the form below and send to the *TestTube* editor.

Information Update for TTU Chemistry & Biochemistry Alumni File

Name _____
Last First Middle Maiden Name

TTU Degree (Circle all that apply): BA BS MS PhD Postdoc

Year(s) of Degree(s) _____
(please give name of research advisor for graduate & postdoc positions, and school, if not TTU)

Address: _____
_____
_____
_____

E-mail Address: _____

_____ Check here if this address is different from the one printed on your issue of the *TestTube,*

Employer: _____ **Position:** _____

Business Address: _____
_____
_____

Comments, Corrections, News (photos are welcome!):

Please return to: **Dominick J. Casadonte, Jr., Dept. of Chemistry & Biochemistry**
Texas Tech University, Lubbock, TX 79409-1061

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Lubbock, Texas 79409-1061