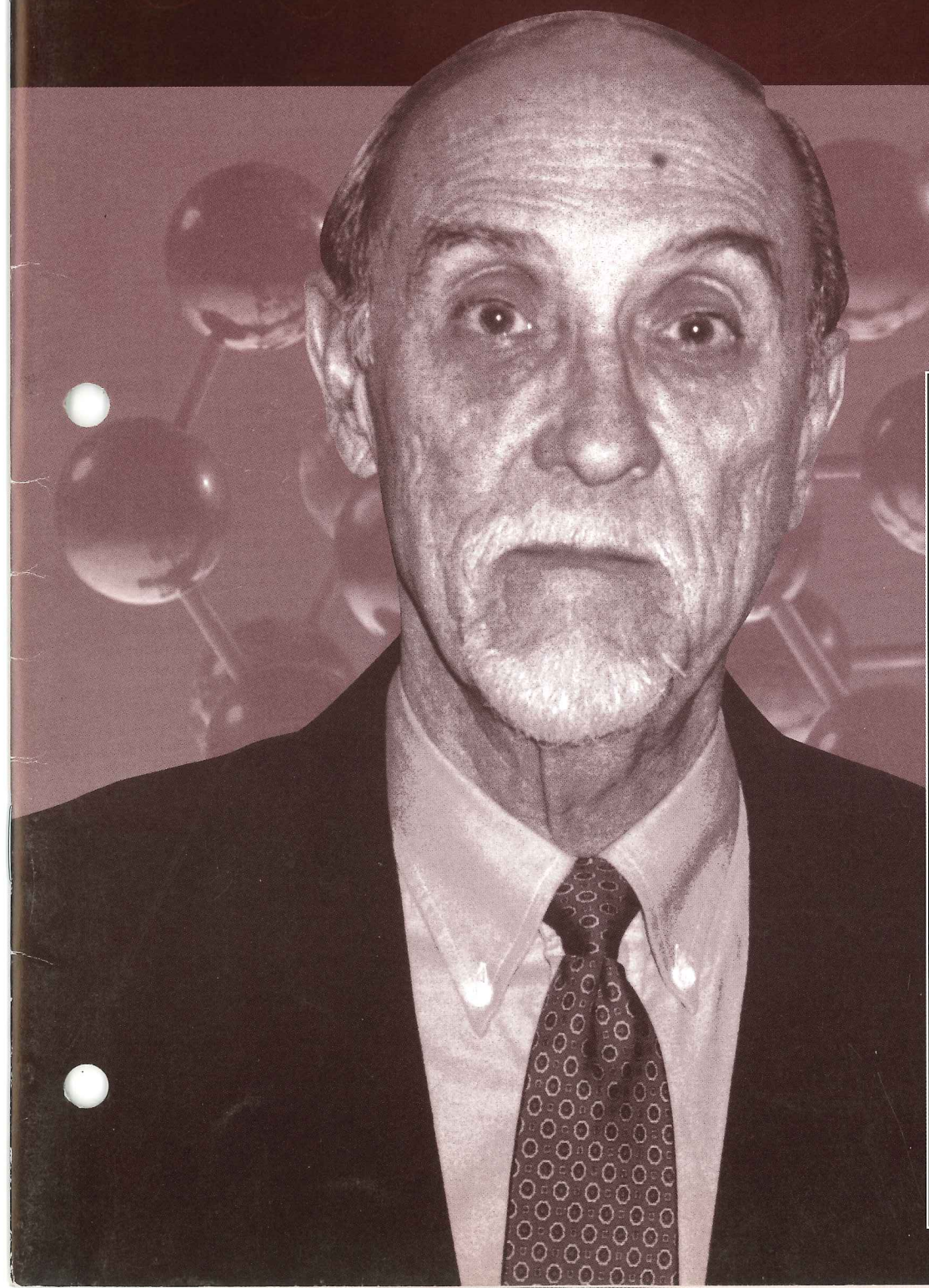
ELEMENTS

The Alumni Magazine of **the Department of Chemistry** of Virginia Tech



Volume 2, Issue 1, 1999

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PLUS:

The New Learning Center Expands and a Brain Researcher Probes Neurological Disorders

Virginia Tech

1872

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Dear Alumni,

Welcome to the second edition of ELEMENTS. I trust that you will find it enjoyable and informative as we attempt to highlight all phases of the Chemistry Department at Virginia Tech.

The past year has been exciting for me personally in my new duties as Chairman of the Department of Chemistry. We currently have 32 filled faculty positions, approximately 25 staff, nearly 200 undergraduate majors and 110 graduate students, numerous part-time faculty, and many research associates. For me, it truly has become a full time job. A number of significant events have happened during the past year, which I hope will give the Department greater effectiveness and higher visibility. The first meeting of our Alumni Advisory Committee was held in October. Fifteen enthusiastic members attended to learn about the Department. The Committee visited the campus again in February to assist faculty in raising discretionary money. The next meeting of the Committee is scheduled for October 15-16, 1999. I am deeply indebted to alumni Roy Bible and Gene Weedon for their excellent leadership of the Committee. As our current members rotate off, please give strong consideration to becoming a member of the Alumni Advisory Committee.

Since January, the Department has been privileged to have a full time person (Barbara Bunn, Ph.D. '93) who will work closely with middle/secondary school teachers and community college instructors to enhance instruction in chemistry. Numerous round tables, magic shows, and workshops are planned for 1999, which will involve many of our faculty. These efforts add to the strong emphasis that the University places on outreach to the community and state. In this regard, General Chemistry for Engineers will be synchronously taught long distance to students at our Fall Church, campus and to students in Blacksburg this summer as a pilot experiment. Graduate courses in analytical and polymer chemistry are planned for the future in various locations in the state.

Plans for a new undergraduate teaching laboratory building are "picking up steam". Ground breaking should take place during the summer of 2000. The building will be shared with the departments of biology and physics. Davidson Hall will be renovated for non-hazardous chemistry activities and administrative offices. Professor John Dillard is actively heading-up our building committee.

New faces continue to dot the faculty. Carla Slebodnick joined the faculty in August as an instructor with responsibilities in teaching and x-ray structural analysis. At the same time Eric Remy, an instructor also, was hired full time to be the Director of the Chemistry Learning Center. Faculty additions for this year are planned in bioanalytical and polymer physical chemistry. Naturally with new faculty there come also retirements. In this regard, Professor George Sanzone retired from the University in January, 1999 after 30 years of service.

In closing, you should know that the continual recruitment of high quality undergraduate majors, graduate students, and faculty is more competitive and demanding than ever. We earnestly seek your assistance as we strive for greater departmental excellence.

Sincerely,

Larry T. Taylor

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Elements is published annually by the Department of Chemistry of Virginia Tech and produced by Serendipity Communications of Christiansburg.

As a publication for you, the alumni of the Department of Chemistry of Virginia Tech, your feedback is welcome. Please feel free to contact Linda Sheppard by phone, 540-231-5966; fax, 540-231-3255, or e-mail, lsheppard@chemserver.chem.vt.edu

And be sure to visit our web site at www.chem.vt.edu.

Department Looks To Increase Funding; Alumni Donations Make A Difference

The Department of Chemistry of Virginia Tech has formed an Alumni Advisory Board to provide input on the future health and direction of the department.

Throughout the upcoming year, the board will focus its efforts on the fact that the department faces an increasing difficulty in conducting and funding research and development. The problem stems from a fundamental shift in the way industries and government agencies now provide funds. In the past, individual contributors, government agencies and industries, providing larger amounts of unrestricted funding and, even in directed research, left some flexibility for conducting ongoing business of the department. Now, industries and governmental agencies are moving toward more targeted and tightly management research and development programs, which places restrictions on the way funds can be distributed.

Even though the Department of Chemistry of Virginia Tech, which is ranked 33rd in the nation, has remained successful in procuring research and development funds, the increasing restrictions limits the department's flexibility.

Unfortunately, the reduction in flexible funds coincides with a significant rise in competition for new faculty members and students, at both the undergraduate and graduate level. And one of the primary uses of these flexible funds is to provide scholarships and fellowships, making recruitment all the more difficult.

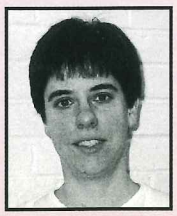
While many of you already donate to Virginia Tech, it is critical to make sure that you designate your gift specifically to the Department of Chemistry, that if your company provides matching funds, you make sure they are specifically designating their gift to the Department of Chemistry, that you become increasingly aware of any opportunities to direct donations from your company to the Department of Chemistry and that you consider either making a first-time donation or increasing your contribution to the department when and if you can.

Every penny does count. And you, our valuable alumni, can make a difference.

The Department of Chemistry of Virginia Tech Grows; Introduces New Faculty

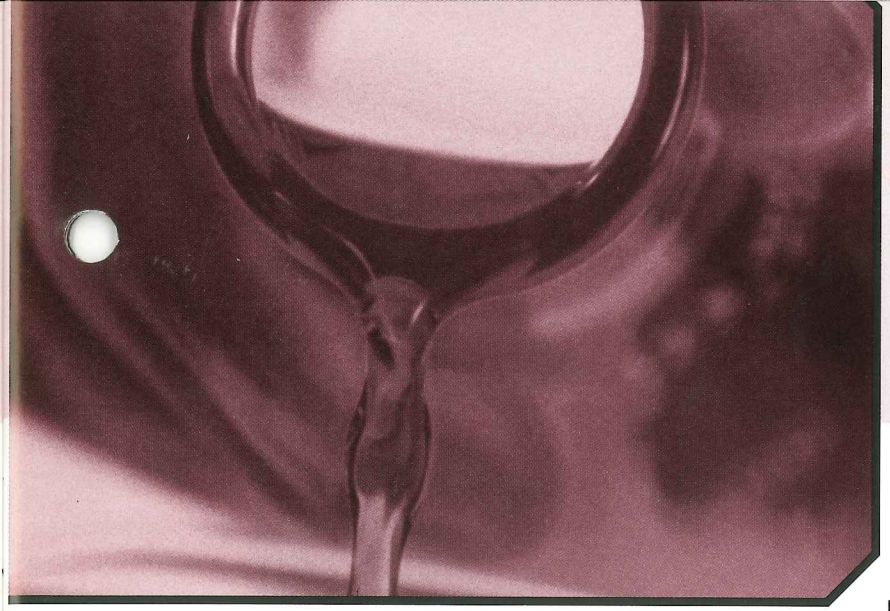
Name: William Ducker
Title: *Assistant Professor*
Education: B.S. and Ph.D. in Chemistry from the Australian National University in 1987 and 1992, respectively.
Personal: 35, married five years to Suzanne, two children, Thomas and Matthew. Enjoys tennis and hiking.
Career Highlights: Ducker served as a visiting scientist for IBM in New York for two years, as a consultant to an Australian firm Rohm and Haas, as a researcher for the Department of Chemical and Nuclear Engineering and Materials Department at the University of California in Santa Barbara, and as a lecturer (the U.S. equivalent of an assistant professor) in chemistry at the University of Otago in New Zealand before coming to Virginia Tech this past fall, where he teaches courses in physical chemistry and conducts research in surfactant and surface chemistry.

Name: Carla Slebodnick
Title: *Instructor and faculty crystallographer*



Education: B.S. in Chemistry from Carnegie Mellon in 1990, Ph.D. in Chemistry from Northwestern University in 1995.
Personal: 30, married to Paul Deck, Assistant Professor in the Department of Chemistry of Virginia Tech.
Career Highlights: Specializing in crystallography and bioinorganic chemistry, Slebodnick's research has focused on elucidating the biological role of metalloproteins through structural and spectroscopic, and kinetic studies of model complexes. She was awarded a postdoctoral fellowship by the National Institutes of Health to study at the University of Michigan from 1995-1998, and was selected as the prestigious Sokel Postdoctoral Fellows at the University of Michigan in 1995.

Name: Barbara Bunn
Title: *Center for Organizational and Technological Advancement (COTA) Coordinator for Outreach for the Departments of Chemistry, Physics, Biology and Geology at Virginia Tech*
Education: B.S. and M.S. in Chemistry from Eastern Tennessee State University (ETSU) in 1986 and 1988, respectively; Ph.D. in Inorganic Chemistry from Virginia Tech in 1993.
Personal: 58, married to the Rev George S. Bunn II for 39 years; three children, two grandchildren.
Career Highlights: Bunn taught at ETSU for several years, before coming to Virginia Tech in early 1998 to serve as coordinator of the outreach activities on behalf of the Chemistry, Physics, Biology and Geology Departments at Virginia Tech. Her efforts focus on encouraging high school students to pursue college degrees in science, promoting the sciences at public schools and community colleges throughout the state, helping Virginia's individuals and organizations compete in an information-driven global economy, and fostering economic development and continuing education initiatives with a special emphasis on connecting university research to the needs of Virginia's industrial, commercial, governmental, academic and professional organizations.
(Also see page 9 to meet Eric Remy)



Virginia Tech Receives $3 Million Biodiversity Grant

What do Taxol, morphine and quinine all have in common?

They are all important drugs. And they are all isolated from plants.

Taxol is the world's best-selling, anti-cancer drug. Morphine is a well-known pain killer. Quinine is an anti-malarial drug.

Drug researchers found Taxol and other new natural product drugs by testing thousands of plants for biological activity, then isolating the medicinally active compounds from these extracts which showed activity. The problem with this approach, however, is that it requires access to thousands of plants, not to mention that most of the world's plant biodiversity is contained in its fast disappearing tropical rain forests.

The answer? A different way to develop new drugs from the rain forest and at the same time contribute to the economic health of the country, in which the forest is located. The idea is not only valid, but strong enough to receive renewed support from the National Institutes of Health (NIH) for related research currently underway at Virginia Tech.

In fact, the NIH recently awarded Virginia Tech a five-year cooperative grant for support of drug discovery and biodiversity conservation in Madagascar and Suriname with first-year funding of $612,000. Directed by chemistry professor David Kingston, Tech's International Cooperative Biodiversity Group, includes six collaborators on three continents.

American team members include Conversation International (CI), a Washington, D.C.-based organization; Missouri Botanical Garden (MBG), one of the world's major botanical gardens located in St. Louis; Bristol-Myers Squibb Pharmaceutical Research Institute in Wallingford, Connecticut; and Dow Agrosciences in Indianapolis. Work in Suriname is in collaboration with the Suriname drug company BGVS, while the Madagascar collaborator is CNARP, a Madagascar research center.

As part of the project, plants will be collected in Madagascar and in Suriname by both MBG and CI. Extracts will be prepared by BGVS and CNARP, and tested at Bristol-Myers Squibb and Dow Agrosciences. Isolation of bioactive compounds will take place at both Virginia Tech and Bristol-Myers Squibb. Compounds with sufficient activity will be developed into drugs by Bristol-Myers Squibb, or as agrochemicals by Dow Agrosciences.

"Our overall aim, is to find new drugs to benefit mankind, but also to provide specific benefits to Suriname and Madagascar through our work," explains Kingston. "If we find a drug, the host country will receive royalties on the drug sales, but we have also obtained commitments form both Bristol-Myers Squibb and Dow Agrosciences to provide critical funding for in-country development efforts. This is a win-win situation. It benefits the USA, as well as Suriname and Madagascar."

Undergraduate Research Symposium Tradition Continues

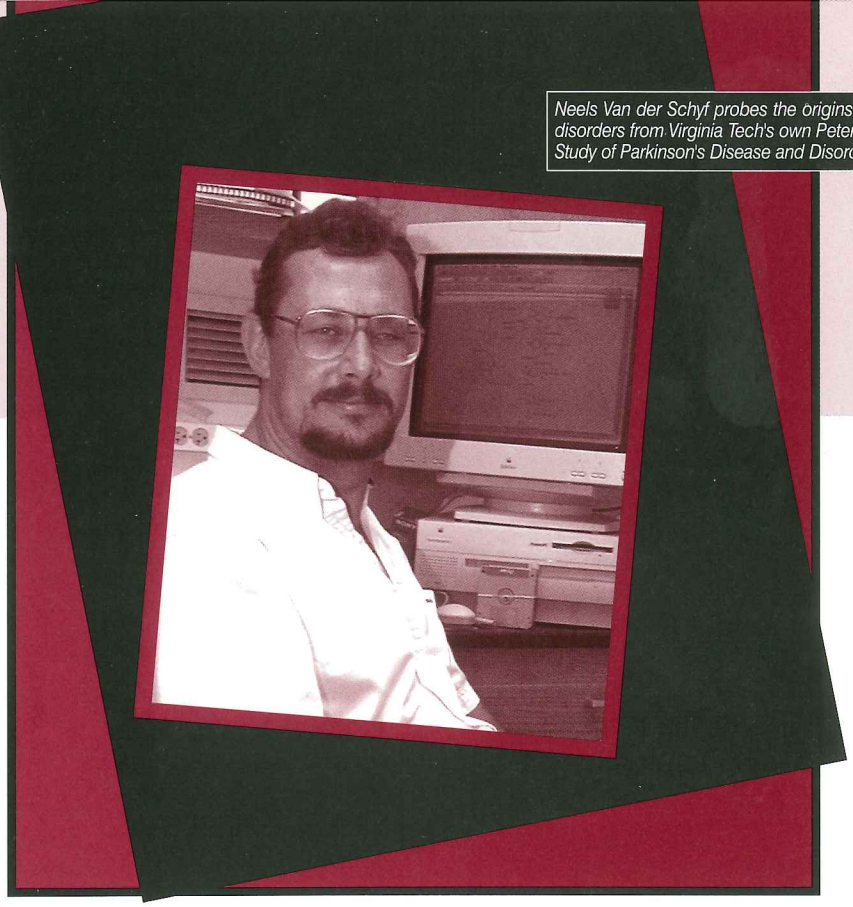
Approximately 30 students from seven colleges and universities participated in the 19th Annual Undergraduate Research Symposium held in Blacksburg at the Four Points Sheraton Hotel this spring.

Sponsored by Virginia Tech's Chemistry Club, a student affiliate chapter of the American Chemical Society, the symposium provides an opportunity for students to share their research with peers and faculty, share ideas in a friendly atmosphere, practice public speaking and present posters. Participants included chemistry and other science majors from Virginia Tech, as well as VMI, Appalachian State, the United States Naval Academy, Morgan State, Longwood College, the College of William and Mary and Georgetown University.

AlliedSignal provided funding as a corporate sponsor as it has done now for five years.

"Our overall aim, is to find new drugs to benefit mankind, but also to provide specific benefits to Suriname and Madagascar through our work."

—David Kingston



Neels Van der Schyf probes the origins of neurological disorders from Virginia Tech's own Peters Center for the Study of Parkinson's Disease and Disorders.

Brain Researcher Probes Neurological Disorders

by Jeffrey S. Douglas

South African medicinal chemist Dr. Neels Van der Schyf has traveled halfway around the world to join Virginia Tech Researchers on an expedition to explore the biochemical catacombs of the human brain.

Now working with the Peters Center for the Study of Parkinson's Disease and Disorders of the Central Nervous System, Co-Director Neal Castagnoli and colleagues, Van der Schyf — who shares a faculty appointment as a research associate professor between the Department of Chemistry of Virginia Tech and the Virginia-Maryland Regional College of Veterinary Medicine — is trying to figure out what causes a host of devastating neurodegenerative disorders.

The world they are exploring is a place where neurotransmitters like acetylcholine, serotonin and dopamine fire impulses from neuron to neuron in ways that create thought and emotion and movement, a place where the tangible world of synaptic junctions and molecules and electric current converges with the metaphysical world of mind and perception and sensation.

The Holy Grail at the end of the path may be a cure for the millions afflicted with disorders like Parkinson's, Huntington's Chorea, and Alzheimer's diseases.

"The brain is a fascinating organ, yet it's not well understood," says Van der Schyf. "How can you relate something like emotion to chemistry?"

Human cognitive and motor function are the result of precisely choreographed processes in which a series of constantly interacting neurochemicals and their metabolites stimulate different parts of the human brain. When those delicate relationships go awry through natural aging or toxic processes, a Pandora's box of neurological problems can be unlashed, ranging from paralysis to dementia.

Cornelis Van der Schyf has always been interested in science. In fact, a model rocket explosion which injured him and some playmates as a youth left him in a coma for days and claimed his left hand and eye. But he emerged with a cheerful and enthusiastic outlook on life.

After earning a professional degree in Pharmacy, and masters and doctoral degrees in bioorganic medicinal chemistry from South Africa's Potchefstroom University, Van der Schyf began a career in academic research with interests ranging from ethnobiology to calcium channel blockers in heart disease and the mechanisms of drugs of abuse.

It was a chance meeting with Neal Castagnoli, then professor at the University of California, San Francisco, in the mid 80's during a sabbatical at the University of Connecticut that led him to Virginia Tech.

The encounter prompted Van der Schyf to redirect his research to examine the role haloperidol, a drug used to treat schizophrenia, was playing in the development of parkinsonian symptoms and tardive dyskinesia, a sometimes irreversible neurological condition characterized by facial paralysis and involuntary contortions in those treated with the drug.

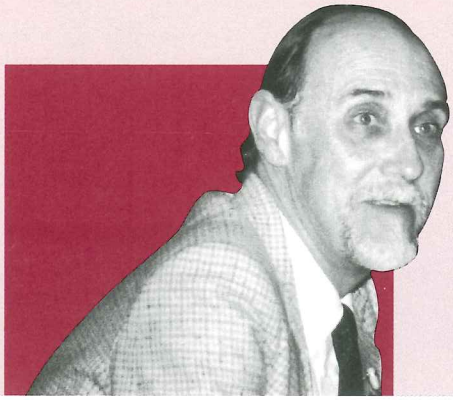
Experiments with research primates in South Africa confirmed earlier findings by Castagnoli, who had since relocated to join the Department of Chemistry of Virginia Tech.

Castagnoli invited Van der Schyf to visit Virginia Tech in 1991. Then, during a four-month visit in 1993, he and Castagnoli designed a major in vivo study using the primate laboratory back in South Africa and the collaboration blossomed. Progress was made on a number of fronts and numerous scientific papers were published in prestigious journals.

The productivity of the collaboration was soon apparent, and Van der Schyf resigned from his position as professor and head of the Department of Pharmaceutical Chemistry at Potchefstroom University to move to Blacksburg with his family in 1995.

Today he continues his research and lectures in graduate neurochemistry and drug chemistry classes. In addition, he remains active internationally, a fact that recently earned him membership of Phi Beta Delta, the Honor Society for International Scholars. He serves as an adjunct professor in the School of Pharmacy at Potchefstroom University, was a visiting professor in Australia and is a member of the Complementary Medicines Expert Committee of the Medicines control Council of South Africa (the South African equivalent of the FDA). But his future lies in America.

"It was like a magnet," says Van der Schyf, who is so enamored with America's commitment to scientific and medical research that he decided to seek U.S. citizenship in five years. "I had to come back because this was where I could best do the job."



Louis Sharpe: He's Been Seen, Heard and Recognized; Now He's Ready to Slow Down

by Christina Maccherone

He is a pioneer in his field. An international consultant and respected scientist. An Editor in Chief. A father of five. And a native Jamaican.

Louis H. Sharpe discovered his love for science and especially chemistry in what would be the United States equivalent of high school.

"Mr. Sleggs was my chemistry teacher and he took an interest in me. He nudged me, encouraged me and gave me experiments to take home," recalls Sharpe, 72. "It didn't take long until I had a lab and a mess in my bedroom, but it was fun and I loved tinkering."

By age 16, Sharpe graduated high school and entered the workforce. He worked for less than a year in a bank, then served Pan American Airways for more than two years, first in operations and then as a radio operator. One day his mother told him to consider college now or never. He considered it. Seriously.

"There were no universities on the island at that time, so in order to get a professional education I had to leave," shares Sharpe. "It just so happened that my mother's brother lived in Richmond, VA., and said I could come live with his family while I went to college. VPI (Virginia Polytechnic Institute) offered an extension program in chemical engineering at the Richmond Professional Institute (now Virginia Commonwealth University) so I enrolled. After my first year, I was sure I wanted to pursue chemistry, so I transferred to the Blacksburg campus."

It proved to be a good decision.

"Virginia Tech gave me a good foundation," he says. "In addition to an education, it provided lots of social and personal opportunities for growth. I got involved with the Maroon Masks (the drama society) and worked with the student radio station, WUVT, as an announcer — one of the earliest at the station. Probably the neatest thing I got to do was to be the announcer on many remote broadcasts to a couple of Roanoke radio stations of big bands such as the Dorseys (both Tommy and Jimmy), Gene Krupa, Skitch Henderson and several others when they were on campus playing for the dance weekends of the German and Cotillion Clubs. At that time, these dance weekends were the really big social events of the year."

In 1950, Sharpe earned his bachelor's degree in chemistry in the honors curriculum, which was the one at that time that prepared undergraduates for Graduate School. With the help of a Virginia Tech professor, Sharpe secured a graduate assistantship in the chemistry department at Michigan State University. Shortly after arrival there he became the Park Davis Fellow. He obtained his doctoral degree in physical chemistry, with minors in mathematics and physics, in 1957.

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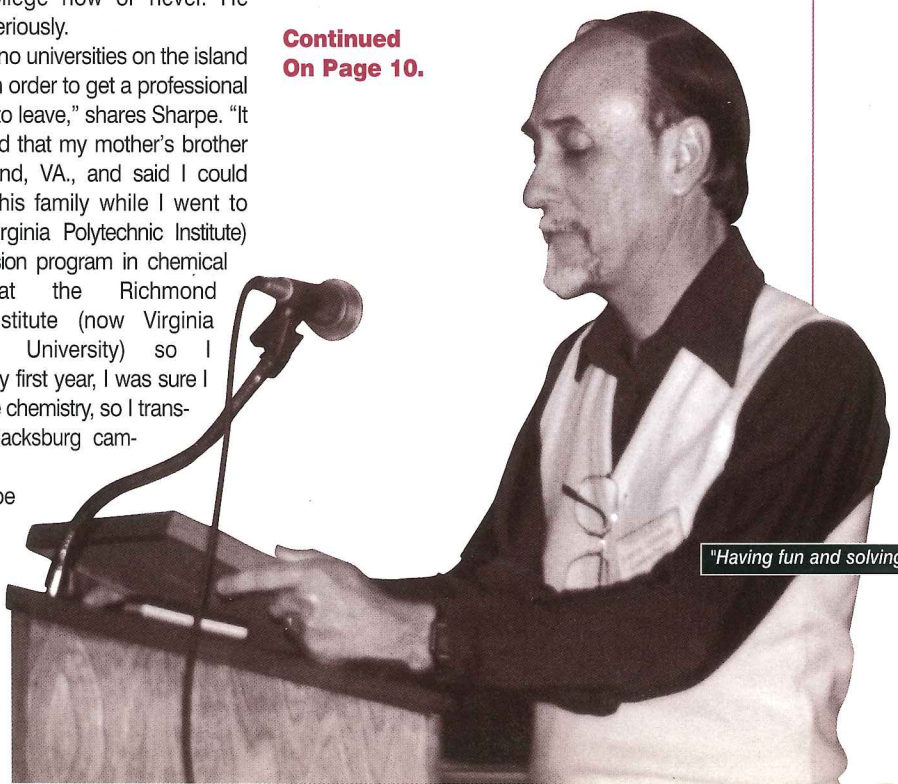
"It didn't take long until I had a lab and a mess in my bedroom, but it was fun and I loved tinkering."

—Louis Sharpe '50



"Having fun and solving problems. That's my game."

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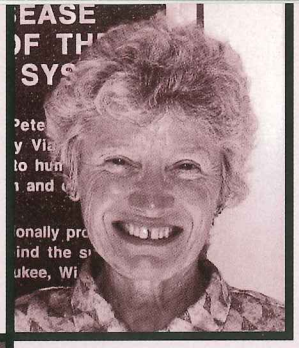
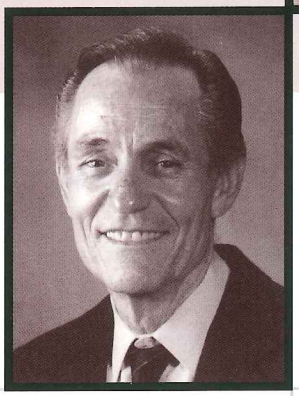
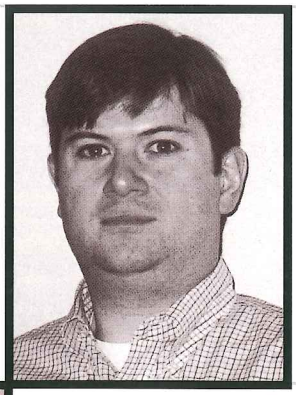


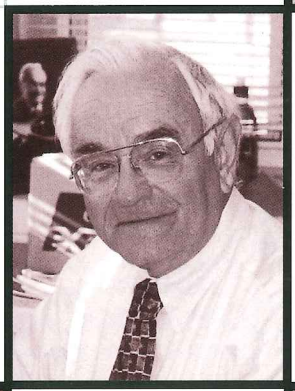
Kay Castagnoli, senior research associate in the Harvey W. Peters Research Center in the Department of Chemistry, attended the Eighth Amine Oxidase Workshop n Balatonoszod, Hungary, where she chaired a session and gave an invited paper entitled, "MAO-B Inhibitors and Neuroprotection." She also presented a plenary lecture on "Monoamine Oxidase B Inhibition and Neuroprotection," at the 13th Congress of the Polish Pharmacology Society in Krakow, Poland, which will be published in a special issue of the Polish Journal of Pharmacology.



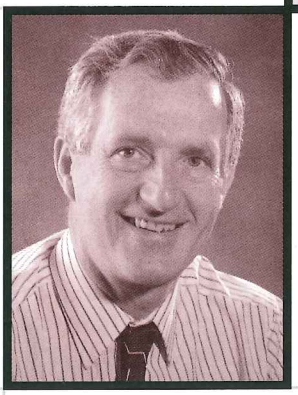
Neal Castagnoli Jr., the Peters professor of chemistry and co-director of the Harvey W. Peters Research Center, received the Virginia Tech University Alumni Award for Research Excellence, which carries with it a monetary gift. He has also been elected as chair-elect for the newly-formed American Chemical Society Division of Chemical Toxicology and will assume the position of division chair in 2000. Castagnoli also attended the 13th Congress of the Polish Pharmacology Society in Krakow, Poland, where he gave a plenary lecture on "Enzyme Catalyzed Bioactivation of Cyclic Tertiary Amines to Form Potential Neurotoxins." The lecture will be published in a special issue of the Polish Journal of Pharmacology.



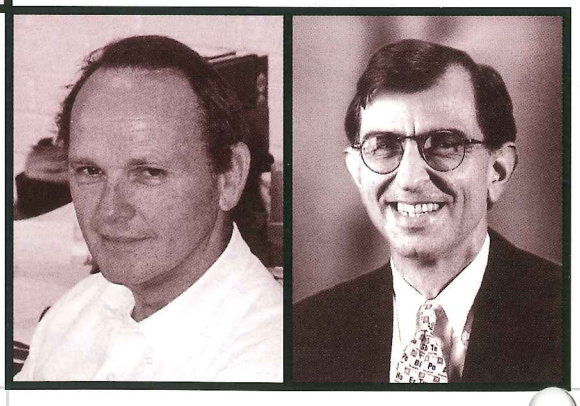
Paul A. Deck, an assistant professor of chemistry, was awarded a $343,000 Career Development Award from the National Science Foundation, and was one of 13 recipients of a $50,000 Cottrell Scholar Award form the Research Corporation, a Tucson-based foundation for the advancement of scie



James P. Wightman, an honorary alumni distinguished professor, was recognized with the Virginia Tech Alan F. Clifford Service Award and has been elected as a member to serve on the board of directors for the Adhesive and Sealant Council Inc.

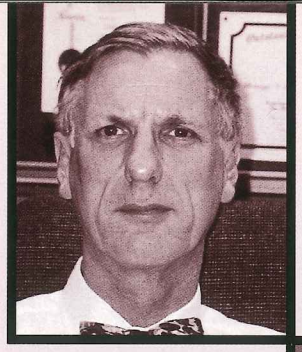


Harry W. Gibson, professor of chemistry, presented a lecture about "New Polymers by Use of Self Assembly" at the Ninth International Conference on Polymer Based Technology in China this spring. He has also been invited to speak at the fifth International Symposium on Polymers for Advanced Technologies to be held in Japan this fall.

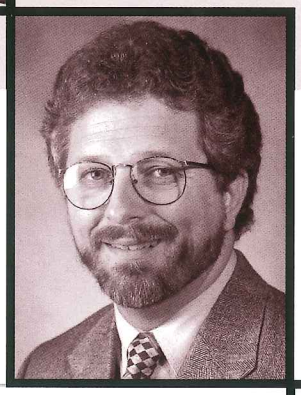


John G. Dillard and Richard D. Gandour, both of whom serve the department as professors, have been awarded a diversity grant to conduct research this summer with Historically Black Colleges and Universities.

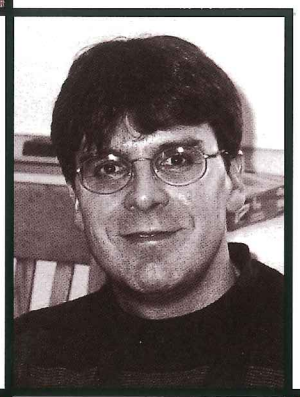
PEOPLE IN THE NEWS



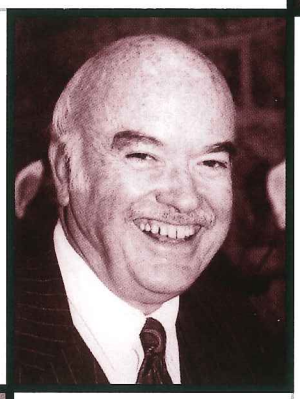
David G. I. Kingston has been named as the 1999 recipient of the American Society of Pharmacognosy Research Achievement Award and the Gene Wise award from the Virginia Blue Ridge section of the American Chemical Society.



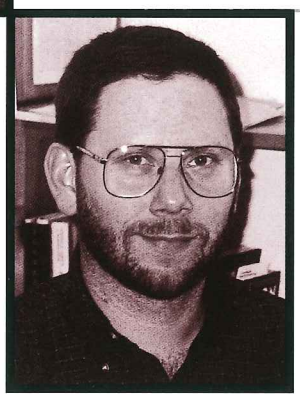
Gary L. Long, an associate professor of chemistry who is on leave at the National Science Foundation, won a Virginia Tech Certificate for Teaching Excellence and is one of two recipients of the Virginia Tech 1998-99 College of Arts and Sciences Annual Diversity Award, which included $500.



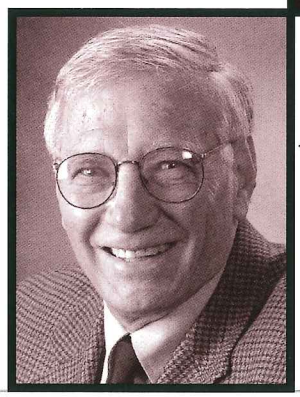
Timothy E. Long, assistant professor of chemistry, was one of 14 recipients of the International Union of Pure and Applied Chemistry Young Observer Award from the National Research Council. As part of the award, a $1500 travel grant will allow him to attend the IUPAC assembly and congress in Berlin this August.



James E. McGrath, University Distinguished Professor of Chemistry and Director of the National Science Foundation and Technology Center for High Performance Polymeric Adhesives and Composites, received the Polymer Division Service Award for service to the American Chemical Society division of polymer chemistry.



Brian Tissue of the Department of Chemistry presented an invited talk on "Lanthanide Luminescence and Dynamics in Metal-Oxide Nanocrystals" at the International Rare Earth's Conference in Fremantle, Australia.



Harold McNair, professor of chemistry, co-chaired a workshop — based on a popular American Chemical Society short course which he has taught for 30 years — on gas chromatography at the University of Messina in Italy.

A new learning center provides students with computers, internet access, and interactive learning tools.

The Chemistry Learning Center Expands; Provides Valuable Technology and Human Resources To Students

The Information Technology Age is here to stay. But even though we live in a high-tech, high-touch, information-driven, computer-oriented society, there's nothing like the human factor. Especially when it comes to learning.

For years, the Department of Chemistry of Virginia Tech has not only provided a resource room — equipped with chemistry-related learning materials such as textbooks, lab manuals, how-to publications, desks, work areas, and computers — for its students, but has made a graduate teaching assistant available to undergraduates. This fall, the Department took the concept one step further. It expanded the resource center into an official Chemistry Learning Center.

"While computers are here to stay and should be integrated into the chemistry curriculum, nothing replaces human knowledge and human interaction," says Eric D. Remy, director of the Chemistry Learning Center. "The center gives students the best of both worlds."

After a year of work, a committee — including chemistry faculty members, Pat Amateis, Karen Brewer, Gary Long, Larry Taylor, Geno Iannaccone, Larry Jackson and Tim Pickering — was able to make the Chemistry Learning Center happen. They received a $26,000 grant from Virginia Tech's Center for Innovation and Learning to create a web site for the department (www.learn.chem.vt.edu). They received additional funding of approximately $60,000 from the provost office for eight computers, printers, a digital camera, computer projector, and other information-related technological materials. They negotiated a deal with the university, in which they obtained about 40 power-Macintosh computers from what used to be the McBryde computer lab and in return, will make the Chemistry Learning Center available to students across the curriculum. And they secured internet access, expanded space — renovated with funds provided by the Dean of the College of Arts and Sciences — and additional staff. With everything in place, they opened the Chemistry Learning Center in 5A Davidson Hall.

Now, students can access the internet from each workstation. They can take on-line quizzes, work their way through self-guided tutorials, simulate and manipulate lab experiments in an interactive environment, and when necessary, turn to humans — paid teaching assistants — for more knowledge. In fact, the center is staffed and open to chemistry students from 10 a.m. to 5 p.m., Monday through Thursday. It is open to all Virginia Tech students from 5 p.m. to midnight, Monday through Thursday, and 10 a.m to 5 p.m. Sunday.

"The center gives students the opportunity to work with a teaching assistant at their convenience, instead of having to schedule an appointment ahead of time," points-out Remy, who joined the Department of Chemistry of Virginia Tech in August, 1998, to direct the new Chemistry Learning Center, as well as to develop and integrate computer-based learning concepts into the chemistry curriculum. "It also gives them access to software packages they might not otherwise have, allowing them to simulate lab experiments, visualize them in three-dimensions, and manipulate models on the screen ... things that lend themselves to a better, deeper understanding."

In a lab environment, for example, students can't necessarily alter the pressure and temperature just to see what happens. In the Chemistry Learning Center, they can tweak settings and simulate just about anything.

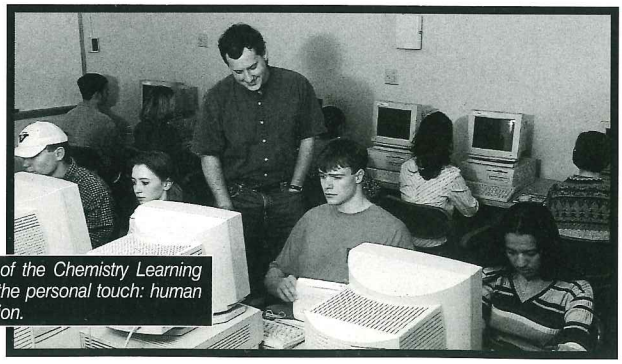
"Chemistry is a difficult subject," notes Remy. "As teachers, we must make learning fun. Computers can help us do that."

Approximately 2,200 students take general chemistry each year. It is a tough academic course, and can certainly be a bit overwhelming to freshman students to sit through lecture after lecture with hundreds of other undergraduates. In addition to staffing the Chemistry Learning Center and providing weekly problem-solving help sessions, Remy is integrating the computer-based learning into the course to hopefully, make it more exciting, more interactive. "Students can work their way through a textbook problem, turn to the back of the book for the answer and know if they're right or wrong," explains Remy. "But with computer-based learning or an on-line quiz, students can learn exactly why and what they're doing incorrectly. And the software can be more tailored to their learning ability."

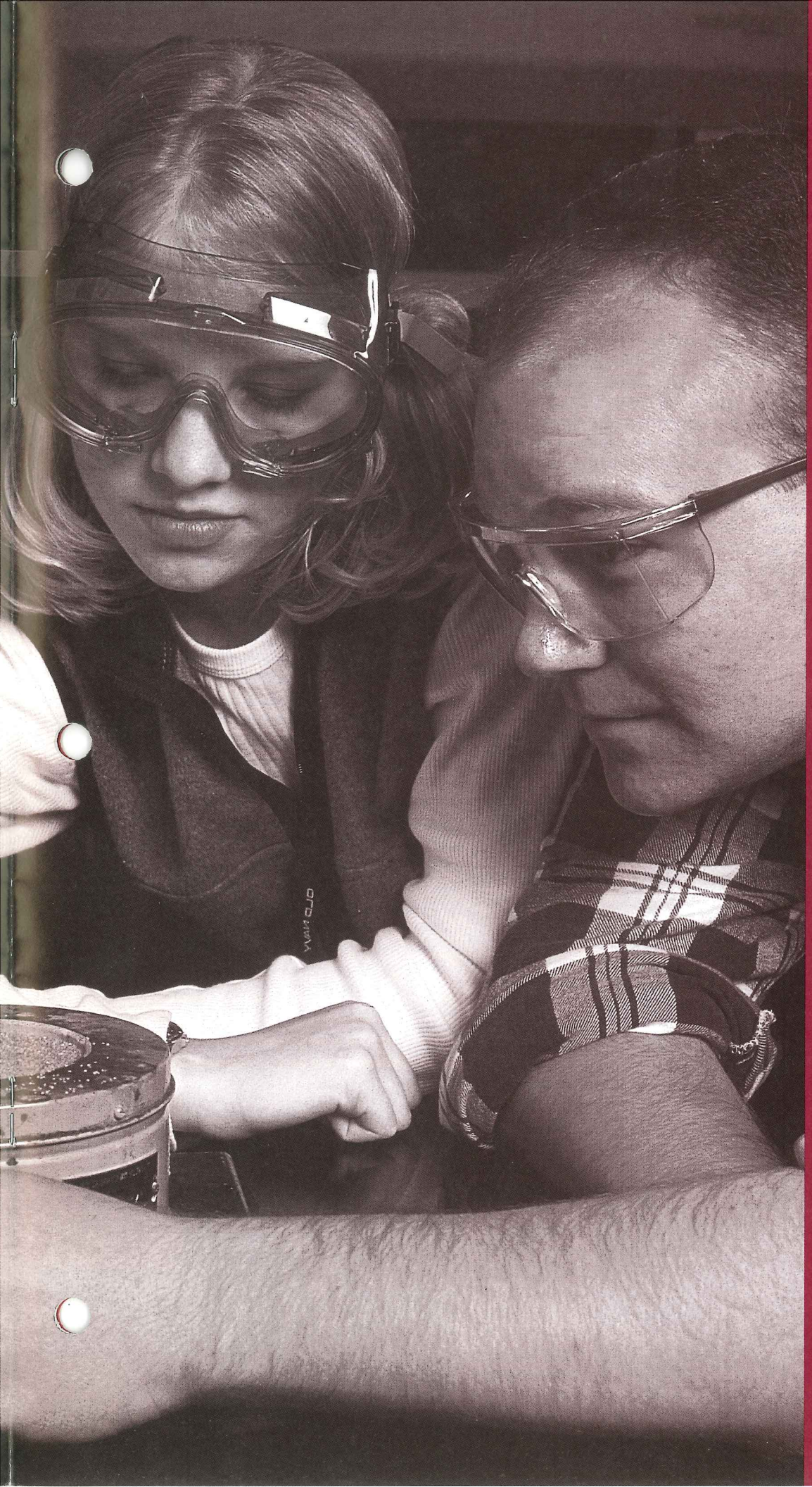
According to Remy, Virginia Tech's Department of Chemistry is among the first in the nation to offer students an interactive learning center and provide live, web-based teaching materials.

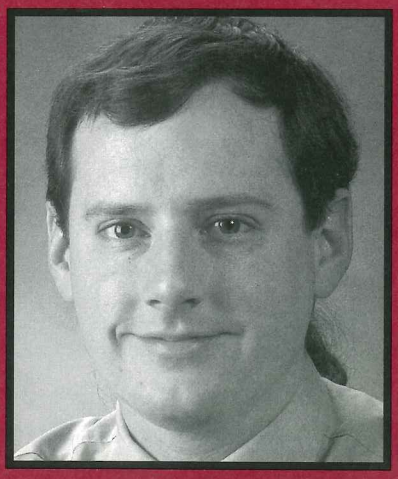
Already deemed a success, the Chemistry Learning Center's future is even brighter. It will expand again when the department's new building is completed, and will in fact, include three, 30'x30' linked rooms. It will expand on-line testing to include, not just general chemistry, but other courses, such as organic. And it will enhance and update its computer systems and equipment.

"With greater space and resources, we will be able to both offer students more personal help and explore new ways of teaching," says Remy.



Eric D. Remy, director of the Chemistry Learning Center, offers students the personal touch: human knowledge and interaction.





Eric D. Remy

Age: 33

Native: North Wales, Pennsylvania

Education: B.S. in Chemistry from the College of William and Mary, 1988; Ph.D. in Hartree-Fock molecular dynamics from Stanford University, 1994; Post-doctorate work, specializing in polymer phase diagrams, Xerox in Canada, 1995.

Title: Chemistry Instructor and Director of the Chemistry Learning Center, Virginia Tech

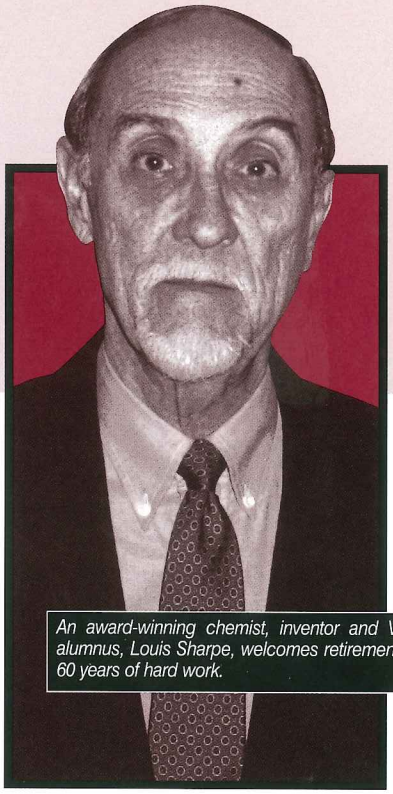
Personal: Married six years to wife, Rebecca.

Interests: Biking, reading and gaming.

Career Highlights: Remy joined Virginia Tech's faculty in August, 1998, after a two-year stint with the University of Southern California where he developed and integrated computer-based teaching concepts into their chemistry courses.

Philosophy: "Computers offer teachers a way to expand their capabilities. Understanding basic concepts in chemistry and science has become essential for people living in our modern world, and we should explore all avenues to help students learn and enjoy these subjects."

SHARPE CONTINUED FROM PAGE 5



An award-winning chemist, inventor and Virginia Tech alumnus, Louis Sharpe, welcomes retirement after nearly 60 years of hard work.

Throughout his 30-year career with AT&T Bell Laboratories, Sharpe made himself known and met and married his current wife of 31 years, Diane. Today the couple lives in Williamsburg, share a love of jazz and travel the world together.

Among his many accomplishments and contributions, he was the first scientist to apply the technique of multiple internal reflection infrared spectroscopy to detect and study monolayers on surfaces; developed a concept (published in 1966) — which continues to be applied throughout the adhesives bonding industry — of assessing durability of adhesive joints by concurrent application of stress, humidity and temperature; created and named another widely used concept known as the interphase; and he founded and became the original and only Editor in Chief of the first journal in the field of adhesion, *The Journal of Adhesion*, in 1969. Today, Virginia Tech chemistry professor James P. Wightman serves as one of the the journal's associate editors.

In addition, Sharpe has presented talks throughout the world, including such places as Japan and Europe; held a secret clearance for 25 years during his tenure at Bell Labs, has published more than 40 papers, has secured approximately 10 patents for his inventions, and has served on the Board of Advisors for the Center for Adhesion Science (CAS), which was the precursor to Virginia Tech's internationally-known Center for Adhesive and Sealant Science (CASS).

He also was a charter member of the Board of Directors of the Education Foundation of the Adhesive and Sealant Council (ASC), which is the foundation that provides the primary funding for the CASS and for the ASC Endowed Professorship at Virginia Tech, held by professor Tom Ward of the Department of Chemistry.

"The CASS and its accomplishments also make me extremely proud of Virginia Tech and my degree," he says. "This Center at Virginia Tech is unique in many ways. It certainly has the closest relationships, as well as the greatest degree of mutual respect and sharing among its members, of any Center I've ever seen and that's most of the secret of why it functions so well."

Sharpe's efforts have not gone unnoticed.

For starters, his name appears in many publications, including American Men and Women in Science, Who's Who in Technology, Who's Who in the South and Southwest, Who's Who in Science and Engineering and even Who's Who in the World.

In addition, he won the American Society for Testing and Materials' (ASTM) Adhesives Award in 1968, was named a Fellow and received the Society's Award of Merit for his many contributions in 1982. He became the first William C. Wake Memorial lecturer of the Plastics and Rubber Institute of Great Britain at Cambridge University in 1990, the first Robert L. Patrick Fellow of the Adhesion Society in 1991, and was recognized with the prestigious Adhesion Society Award for Excellence in Adhesion Science in 1993.

"I've enjoyed going to college and working for 56 years now and am proud that I've made the contributions I have," he says. "But now it's time to slow down. I've pretty much stopped all consulting and only work hard at editing The Journal of Adhesion. One of these days in the not-too-distant future I'll truly retire."

Ray Dessy Embracing Science, The Humanities and Life

by Christina Maccherone

At age 68, Ray Dessy loves life.

In his opinion, "life should be like a repertory theatre,"- a blend of drama, mystery, love, travel, excitement, music and art that changes periodically.

Anything but your stereotypical chemist, he loves his work, his wife and executive assistant of 40 years, and the approximately 100 pre- and post-doctoral students he has helped throughout his Virginia Tech career.

He loves Australia, and has explored — through a combination of backpacking, hiking and four-wheeling — that Continent from North to South in the East, West, and Red Center. He loves horses, and works daily with their animals from his 40-acre Blacksburg home that includes a stable and indoor riding ring, and has trained dressage horses to the Intermédiare level. He loves historical musical instruments, especially the alto and tenor recorder, and when he travels in Europe manages to attract and thrill audiences on the street as a "busker," playing both Baroque and Blues music. He even writes music articles for professional journals. But he still loves the challenge of solving difficult, high-risk research problems.

Behind Dessy's down-to-earth charm and straightforward demeanor, lies a visionary who helped the Virginia Tech Department of Chemistry become what it is today. And his 71-year-old wife and partner, Lee, has stood beside him, traveled beside him and worked beside him, during this life's journey.

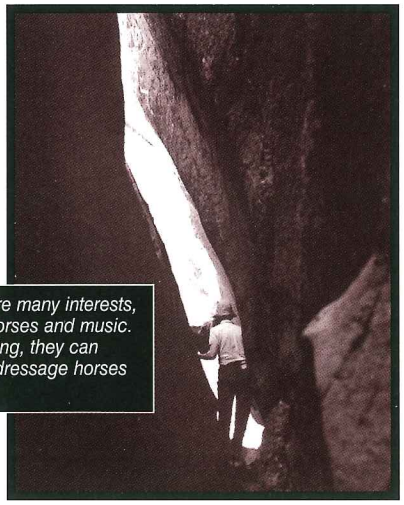
"We're a team," says Dessy. "We do everything together, and learned that in order to have a good relationship, we needed to know and understand what each of us experienced. We are hardly ever separated. When I travel, she comes with me. We work the horses together. We play recorders together. We've caved, climbed and been scuba diving together. We remain very close."

Dessy was attracted to chemistry after working in retail, hospital and vet clinic pharmacy and becoming fascinated with the idea of making drugs. He earned his bachelor's degree in pharmacy and his doctorate degree in chemistry from the University of Pittsburgh.

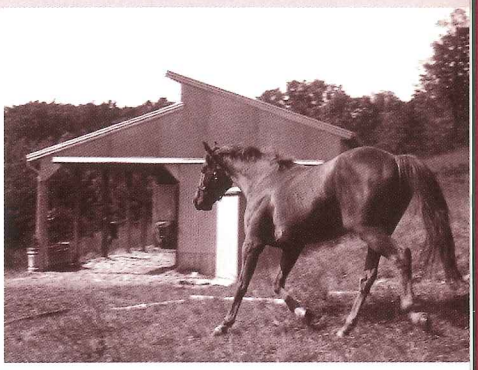
In 1970, Dessy began teaching chemists all over the world about computer-related technologies and lab automation. Recognized as a forerunner, Dessy became the first recipient in 1986 of the Computers in Chemistry national award sponsored by the American Chemical Society.

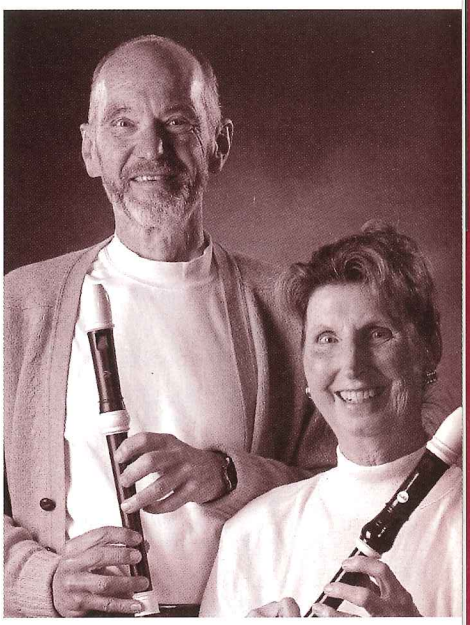
He says, "In the early '70s the needs of chemistry had clearly bypassed the fore-front of what was currently available from institutional computing centers. Automated sample prep, robotics, data collection, graphics, molecular modeling and lab databases were needed to help lead chemists into a new land. He and Virginia Tech began offering one-week intensive short courses in the area, and thousands of trained students left to change the way chemistry was done. Thirty years later, it is the needs of biochemistry that have bypassed the forefront of computing technology, and present new challenges in combinatorial chemistry, high-throughput-screening, biosensors and genomics."

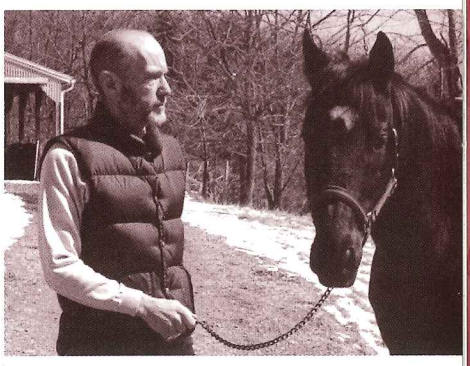
In 1979, Dessy had the foresight to predict the importance of career development planning for chemists and introduced a course tailored to help graduate students prepare themselves for industry- easing the transition into the workforce and balancing their knowledge of chemistry with a general understanding of the business world.



Ray and Lee Dessy share many interests, including their love of horses and music. When they are not working, they can often be found training dressage horses or playing recorders.







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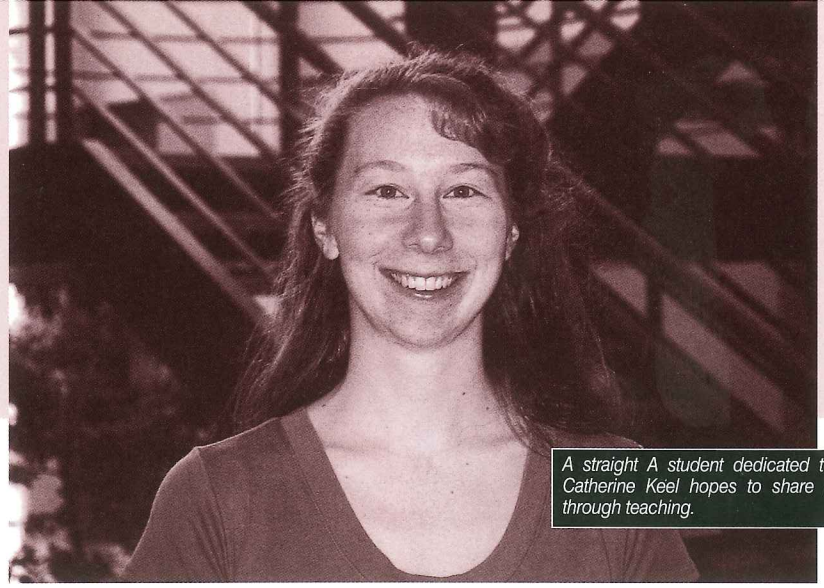
STUDENT PROFILE



A straight A student dedicated to learning, Catherine Keel hopes to share knowledge through teaching.

Catherine Keel Wants to Inspire and Share Knowledge With Others

by Christina Maccherone

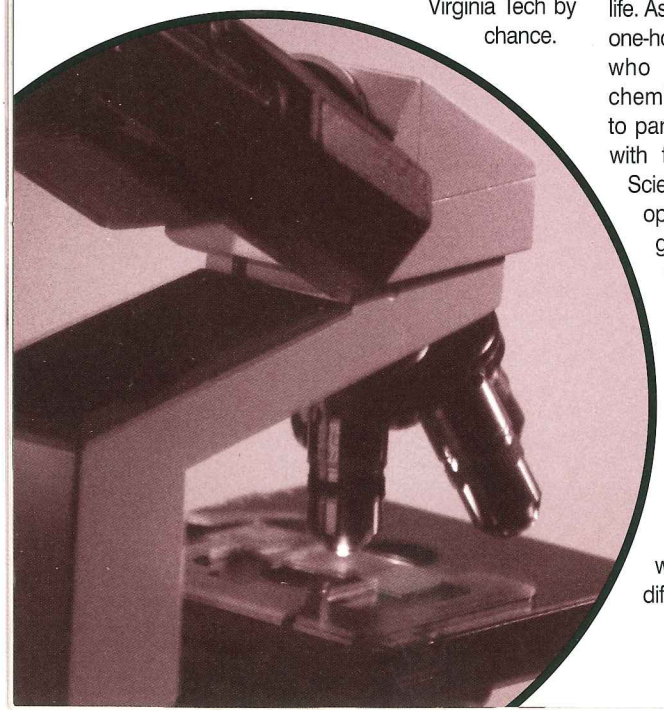
At age 22, Catherine Keel is on a journey to succeed. And nothing is stopping her.

A vivacious and ambitious chemistry major at Virginia Tech, Keel has always been encouraged by her parents to pursue her interests, whatever they may be, learn as much as she can and just go for it. And that is what she has done.

In high school, Keel, an Atlanta native, was drawn to math and the physical sciences. Self-described as an outdoors person who loves to hike and camp, she especially liked biology. But after attending a two week summer science program at North Carolina State that focused on marine biology, the atmosphere and the earth, she decided against making biology a longtime career, and turned to chemistry.

"All scientists help the world and chemists play a key role in making the world a better place," she says. "Really, chemists do so much ... from creating pharmaceuticals to making airplanes fly."

She landed at Virginia Tech by chance.



After touring other Virginia colleges, and travelling Interstate 81 to return to home, her parents suggested to her they stop at Tech. After all, it was on the way.

"It was 4:30 Friday afternoon when we stopped to call the Department of Chemistry," she recalls. "We were surprised to find anyone in, but even more surprised when professor Harold Bell said he would meet us Saturday morning and show us around."

First impressions last.

"I learned that Tech had a strong program," she says, "loved the beauty of the area and made my decision to attend Tech."

In May, she not only graduated with honors, but the satisfaction of knowing she could truly understand a difficult topic.

"Chemistry is certainly not an easy subject, which is one of the reasons I was attracted to it," shares Keel. "I wanted to prove that I was up for the academic challenge."

As a Tech undergraduate, though, she accomplished much more than just the academic challenge. She lived on campus for three years to fully experience campus life. As a sophomore, she began offering a one-hour help session to freshman students who were struggling with general chemistry. As a junior, she was selected to participate in a 10-week, paid program with the Center for Adhesive Sealant Sciences at Tech, where she had the opportunity to work with faculty and graduate students, conduct research on polymer materials, present a 50-page paper and speech about her research, attend a one-week short course and gain hands-on experience in a research and lab environment. And as a senior, she taught two, two-hour problem solving general chemistry classes to about 60 undergraduate students.

"Catherine makes learning fun, which is difficult to do and even more difficult with a subject like chemistry," says Stacie Seaborn, an 18-year-old human foods, nutrition and exercise major at Tech, who took Keel's help class two semesters. "It is obvious that Catherine is there to help us, teach us, mentor us and even, be our friend."

In addition, Keel has been a student member of the Chemistry Club, the student American Chemical Society affiliate, has served the United Methodist Church's Wesley Foundation student chapter as president, choral committee co-chair, service and missions co-chair, and has played a variety of Virginia Tech intramural sports through the Wesley Foundation, including volleyball, softball and intertube water polo.

But her academic challenge doesn't stop with her bachelor's degree

"I've had some great opportunities, experienced what it's like to teach, been exposed to new knowledge and research, worked with graduate students and am excited to take on more," she says.

From here, Keel is currently enrolled in a dual master's degree program at Virginia Tech, and will simultaneously pursue graduate degrees in chemistry and education with the goal of teaching high school chemistry.

"The more I help students learn, the more I like it," she says. "From both sides, as a student and a teacher, it's neat to see the student-teacher relationship evolve and I believe that teaching goes far beyond the traditional classroom. I want to instill a love for learning and passion for knowledge in students. And I realize that high school is not an easy time for anyone. To a large degree, it was my teachers that helped me build my self esteem and develop confidence in my ability. I want to inspire, influence and share knowledge with young people."

CLASS NOTES

'43 Benjamin P. Rouse Jr.
(B.S. '43, M.S. '48, Ph.D. '49), Venice, Fl., retired after working 30 years for Tennessee Eastman Company, moved to Florida where he taught physics at Palm Beach Junior College. He remarried in 1982, and now enjoys golf, photography and playing an electronic organ.

'50 Jerome A. Gourse
Tampa, Fl., was killed in an automotive accident on June 4, 1998.

'52 Benton R. Leach,
Southbury, Conn., retired in February, 1997, as the director of environmental affairs with the Uniroyal Chemical Company, which he served for 42 years. He currently volunteers for United Way and is putting together his family history.

'55 Thomas J. Proffitt Jr.
Kinston, N.C., retired from E.I. duPont de Nemours in November, 1993, after more than 38 years of service, but continues to work part time as a visiting research associate professor at North Carolina State University.

'65 Robert E. Schwerzel
Alpharetta, Ga., is a principal research scientist at the Georgia Tech Research Institute and an adjunct professor for Georgia Tech's School of Chemistry and Biochemistry.

'68 Wayne Griest
Oak Ridge, Tenn., serves as the program manager for the Block II Chemical-Biological Mass Spectrometer Program at the Oak Ridge National Laboratory.

'75 Charles Metcalfe
Sumter, S.C., has established a consulting laboratory, Custom Analytics.

'77 Jerry Clemons
(Ph.D.), Ronceverte, W.Va., was installed as director-elect and secretary/treasurer for the analysis division for the Instrumental Society of America. He is Vice President of order management and engineering for ABB Process Analytics in Lewisburg.

'77 Mitchell Koppelman
(Ph.D.), South Plainfield, N.J., has changed positions with Specialty Minerals Inc. from a marketing and general business manager to Vice President of Research and Development.

'78 David A. Colby
(B.S. '68 Foreign Languages; Ph.D. '78 chemistry), Atlanta, Ga., works for The Coca-Cola Company.

'79 Guy Oldaker
(Ph.D.), Pfafftown, N.C., has established his own practice in Winston- Salem, N.C. where he specializes in criminal, family and commercial law.

'80 Kevin Kossing
(B.A.), Longview, Texas, is president of Delta Distributors, married and the father of two children ages 8 and 5.

'83 Eugene Khor
(Ph.D.), Kent Ridge, Singapore, is an associate professor in the chemistry department at the National University of Singapore.

'84 Deborah Matthews
(B.A.), Arlington, Mass., had twin daughters, Sara and Grace, August 16, 1998. She works as Vice President of PJA Advertising.

'86 Suzanne Wilson Maben
Charlottesville, serves the University of Virginia's department of environmental science as a laboratory specialist.

'86 Scott E. Snyder
Stockbridge, Mich., works for the University of Michigan's Medical Center as a research investigator. He married Elizabeth R. Butch in 1991.

'87 Dru E. Kraus
(B.A.), Daphne, Ala., is a manufacturing manager for International Paper.

'88 Martha (Earley) Aveni
(B.A.), Manassas, reports she is happily rearing her children.

'91 Teresa Bucy
(M.S.), Cary, N.C., left her job in July to stay home with her daughter.

'92 Chris Palmer
(post-doctorate), Socorro, New Mexico, an assistant professor of chemistry at New Mexico Tech, has won a Presidential Early Career Award for Scientists and Engineers.

'92 Ashis Pandya
(Ph.D.), Natick, Mass., serves Photoresists as a research chemist, inventing new polymers.

'96 Chris Curfman
(B.S. '94 biology; M.S. '96 chemistry), Atlanta, Ga., is a doctoral student in Chemistry at Emory University.

'96 Travis Dudding,
Baltimore, Md., is pursing a doctorate degree in chemistry from Johns Hopkins.

'96 M. Patricia Hubieki
(Ph.D.), Newark, N.J., works as a senior chemist for JSTAR Research.

'97 Victor Rosas-Garcia
(Ph.D.), married in October, 1998, and is an Assistant Professor at the Universidad Autonoma Nuevo Leon, in Monterrey, Mexico.

'98 Erkan Baloglu
(M.S.), Blacksburg, is pursuing his doctorate in chemistry from Virginia Tech where he works as a teaching assistant.

'98 Jackie Broadwater
(B.A.), Blacksburg, is a graduate student in Virginia Tech's MBA program.

'98 Jody A. Goad
Blacksburg, conducted research with Virginia Tech Chemistry Professor John G. Dillard last summer and is currently enrolled in the MBA program at Tech's Pamplin College of Business.

DESSY FROM PAGE 11

The class focused on everything from reading a corporate consolidated balance sheet to effectively communicating with colleagues. The course has continued to evolve over the years, and is now taught to both undergraduate and graduate-level students. Paul Deck, a recent faculty addition, is assuming responsibility for the course, and he has received extramural funding for his very novel ideas.

"I believe that if you don't train a medical doctor how to hire people, work with patients and run a business, he or she won't last in a practice no matter how technically competent they are," says Dessy." We need to train chemists that are well rounded, and can get a job and keep it."

In 1995 Dessy created and began teaching a modern-day Honors Colloquium about the Internet and its impact on society, politics, education and finance. The course is different in several ways.

First, it is only available to honors students who have a 3.5 or higher grade point average. Secondly, it is open to students across the Campus and includes undergraduates from communications, psychology, history, political science, biology, electrical engineering and chemistry, as well as others. And thirdly, it does not involve the normal lecture type instruction, but uses an open, free discussion format, representative of Dessy's teaching style.

"The minds of these young people are tremendous; the fact that we never know where our discussions might lead is exciting, and getting everyone to speak out and communicate clearly is challenging and rewarding. The class is a fantastic journey for the students and myself."

"I believe in helping students create their own ideas and encourage learning as an on-going process," shares Dessy, who officially retired in 1992 from Virginia Tech as a professor emeritus, but continues to teach and tackle some of the more complicated biosensor problems, in exchange for a small research lab and office in Davidson Hall.

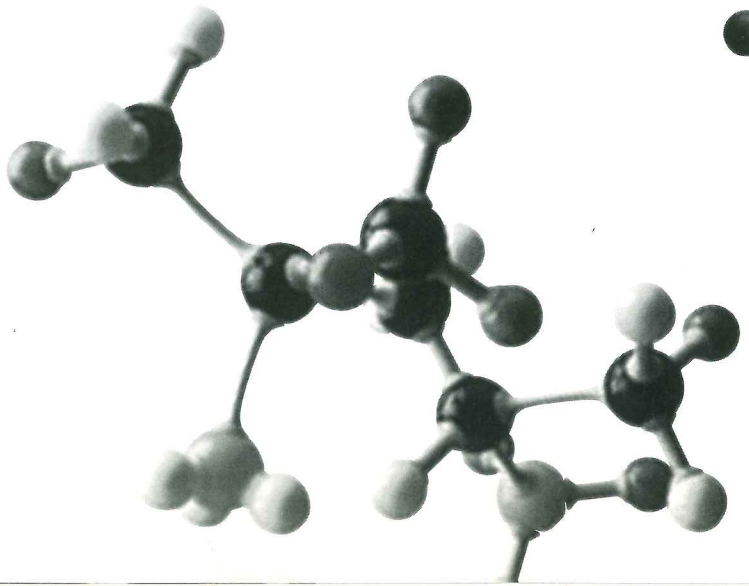
Since joining Virginia Tech's Department of Chemistry in 1966, he and his students have patented piezoelectric and surface plasmon resonance sensors; together they have authored nearly 250 publications, including journal articles, columns, textbooks and lab manuals. They have made great strides in such areas as biosensors, bioseparation devices, microelectronic and fiber optic chemical sensors, and laboratory automation. About 15 percent of Dessy's doctoral and post-doctoral students have joined the world of academia. Others are CEOs, have their own company, or are high level managers and scientists.

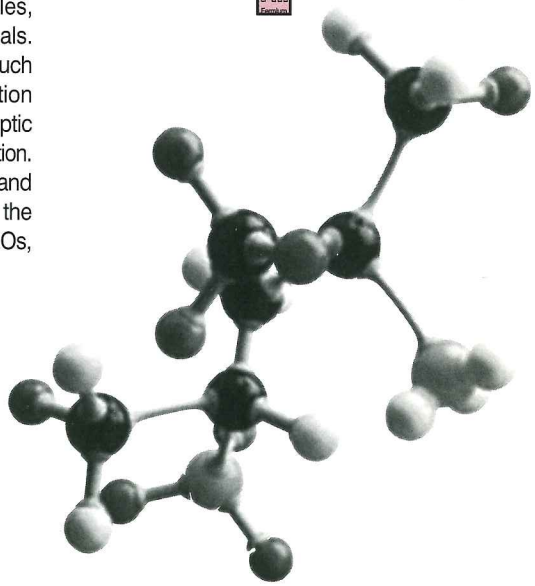
"It is most rewarding to see students do well and hear about their successes," says Dessy, who points out that his wife, Lee, has always worked (in unofficial and unpaid positions) by his side to help him manage the administrative tasks and many personnel matters.

"I believe that as teachers, our students are our most important product. If they are successful in their careers and lives, and they become better than us, then we've succeeded in our job."

But Dessy's young professional colleagues play another role.

"Our students are our extended family," he says, noting that he and Lee keep in touch with most of their graduates. "Really, Lee serves as an honorary grandmother for most of our former students and their children. She even keeps an up-to-date office photo album."





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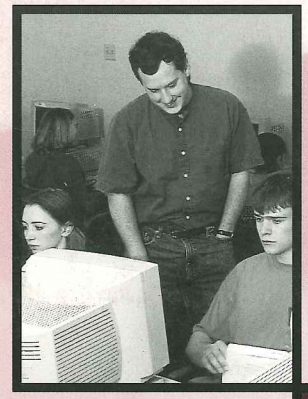
"Old chemists never die. They just fail to react."

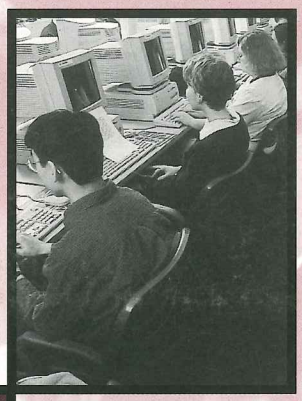
- Campbell Epes, Waynesboro, '53

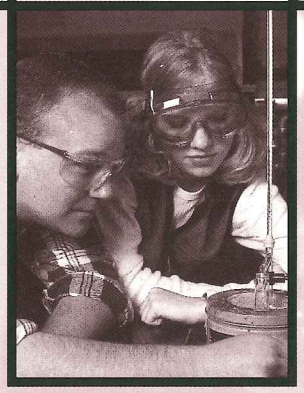
THE DEPARTMENT OF CHEMISTRY OF VIRGINIA TECH'S MISSION

The Department of Chemistry of Virginia Tech has a long history, a solid reputation and a bright future. Our courses provide the chemical foundation for all Virginia Tech science and engineering students and broaden their understanding about the structure and properties of matter. Our undergraduate and graduate degree programs prepare society's future chemists and scientists. Our faculty's research and scholarships generate and disseminate chemistry knowledge to the Commonwealth, the Nation and the world. And our outreach programs offer opportunities to share this knowledge with others, including practicing professionals, as well as primary and secondary school children.

To achieve our mission, the Department of Chemistry of Virginia Tech will continue to pursue multi-disciplinary research within and beyond the University, to find innovative ways to instruct students, to forge partnerships with industry and government, and to establish a reputation as one of the world's highest ranking chemistry departments.







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