

SPECTRUM



VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

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TODAY'S EDITION
See page 4 for
information on \$3-
million coal research
grant

UNIVERSITY MISSION STATEMENT

Virginia Polytechnic Institute and State University is a public land-grant university serving the Commonwealth of Virginia, the nation, and the world community. The discovery and dissemination of new knowledge are central to its mission. Through its focus on teaching and learning, research, and outreach, the university creates, conveys, and applies knowledge to expand personal growth and opportunity, advance social and community development, foster economic competitiveness, and improve the quality of life.

A VISION FOR VIRGINIA TECH

1. A SENSE OF SELF

The complexities of modern society demand, more than ever, the enabling tools

of a college education. Research universities such as Virginia Tech are connected to mainstream societal issues more than ever before. Indeed, the modern American university, especially a land-grant research university with its threefold mission of teaching, research, and outreach, represents a crucial thread in the fabric of American culture.

As Virginia Tech enters the 21st century, we are mindful of the key role the university plays in the development of productive citizens and future professionals, of the contributions of our faculty and students to the generation of new knowledge, and of our impact on multiple levels of community and society. In an era where information empowers and where ideas and innovation are the raw materials of the information economy, Virginia Tech's demonstrated capabilities indicate relevance and value

of the highest order.

Virginia Tech is an institution comfortable with the unique American model of the land-grant university where the discovery, dissemination, and application of knowledge are synergistically balanced. It is part of larger societal systems and dynamically fueled by the process of involvement—involvement in world affairs; involvement in the needs of individuals and their communities, businesses, industries, and governments; involvement in the nurturing of inquisitive minds; involvement in the transfer of ideas from the campus to the marketplace; and involvement in societal problems in our towns, cities, states, and beyond.

While there is joy in the discovery of knowledge for its own sake, Virginia Tech
(See *UNIVERSITY* on 4)



WORRALL

Worrall named to lead NV center

By Jeanne M. Garon

Former KPMG Consulting senior partner Richard Worrall has been appointed director of Virginia Tech's Northern Virginia Center in Falls Church.

In announcing the appointment, interim Provost James R. Bohland said, "Dick Worrall brings to the job years of experience working with international corporations and with many large information-technology firms. When you couple that experience with his faculty experience here at Tech, it makes for an excellent combination of talents for our Northern Virginia Graduate Center."

Bohland said he has personally worked with Worrall on several information-technology projects and has "always been impressed with his ability to accomplish difficult tasks successfully."

While at KPMG, Worrall was coordinating partner of the firm's worldwide management-consulting operations. He has also served as a faculty member at Northwestern University and the University of Wales, as the chief executive officer of two consulting firms, and as a vice president of Science Applications International Corporation (SAIC).

Born in the United Kingdom, Worrall received his undergraduate education in civil engineering from the University of Durham (England) and his master and doctoral degrees in civil engineering from Northwestern University.

Joseph S. Merola, acting dean of Virginia Tech's Graduate School, said that Worrall's "wealth of knowledge and experience will help us move forward with refinements we are planning for the center to meld what Virginia Tech does best with the needs and nature of the Northern Virginia community."

Worrall, who assumes his duties July 1, enjoys a 10-year association with Virginia Tech. He is a visiting professor with the Center for Public Administration and Policy,

(See *WORRALL* on 3)

Board approves policy changes

By David Nutter

The Virginia Tech Board of Visitors adopted several policy changes that will affect faculty and staff across the campus at its meeting Monday.

The board approved changes in the special research faculty ranks. The board created three new ranks: project associate, senior project associate, and project director. Other revisions include the requirement of a master's degree as minimum qualification for appointment to the entry ranks and granting research units not part of a degree-granting department the authority to make initial appointments and promotions to the research professor ranks. However, approval of the appropriate academic department is required to supervise graduate student theses or dissertations.

"The changes were necessitated by a internal review that revealed that a number of such positions were not engaged in research, but rather technical assistance or outreach," said Sandra Muse, director of fiscal and administrative affairs for the research division.

The board also approved changes in the geographic-transfer policy. The transfer policy outlines a process for re-assigning a faculty member to a different primary work location. The policy was amended to allow the transfer from the current 35-mile radius to more than 50 miles from the primary work location.

Associate Provost Pat Hyer said these changes were undertaken to bring university policy in line with IRS regulations and to allow somewhat more flexibility in re-assigning faculty members to meet program needs.

The board approved changes in the university's employee tuition-waiver
(See *BOARD* on 2)

Virginia Tech partner in three CTRF awards

By Susan Trulove

Governor James Gilmore awarded \$18 million in grants to Virginia's research universities from the Commonwealth Technology Research Fund (CTRF) on May 24 "to help Virginia's colleges and universities vie competitively for federal and private research grants," according to a press release from the governor's office.

Grant proposals were evaluated by independent experts, representatives of the newly appointed Virginia Research and Technology Advisory Commission, the State Council of Higher Education for Virginia, Virginia's Center for Innovative Technology, and the Virginia Economic Development Partnership. Grants were presented for projects that promote research in areas vital to economic development and projects designed to attract high-tech industries to Virginia.

Virginia Tech was a partner in two bioinformatics awards.

The Department of Computer Science and

the Virginia Bioinformatics Institute (VBI) received \$2.5 million over three years to strengthen the bioinformatics expertise and computational resources at Virginia Tech.

Dennis Kafura, computer science department head, said "The funding will provide for the hiring of five computer-science faculty members whose research program will be focused on collaborative work with life-science researchers. This initiative will squarely position the department to compete for national funding in bioinformatics research and enhance our ability to partner with life scientists across campus and especially at VBI."

The funding also allows VBI to strengthen its computation resources in partnership with Sun Microsystems. Bruno Sobral, VBI director, said "The bioinformatics research collaboration with computer science builds on the Sun Microsystems award of over a million dollars in

(See *VIRGINIA TECH* on 2)

GM awards VTTI \$4.8-million

By Cindy Wilkinson

General Motors Corporation (GM) has awarded the Virginia Tech Transportation Institute (VTTI) a long-term research and product-testing agreement, with a total that could reach \$4.8 million, to examine various aspects of driver-vehicle interfaces for both collision warning and telematics systems.

The agreement provides the framework to conduct a number of individual projects over a three-year period that will heavily use the Virginia Smart Road and the transportation institute's fleet of instrumented vehicles. The agreement grew from a long-standing research relationship between GM and VTTI and the presence of Virginia's Smart Road research facility. Projects conducted under the agree-

ment will support various elements of GM's safety, human-factors and research activities.

"GM and Virginia Tech have a long history of industry-leading research in the area of driver vehicle interface performance," said Richard Deering, manager, crash avoidance and system development, General Motors. "This agreement furthers our relationship. We want to use the Virginia Smart Road to do a great deal of important testing to optimize the performance of various collision-warning systems and to learn more about how drivers can safely use telematic systems."

"This alliance solidifies Virginia Tech's standing as a leader in transportation research and represents an important step forward for our

(See *GM* on 2)

ACTIVITIES

EVENTS

Friday, 8

Summer Arts Festival Program, 6 p.m., Henderson lawn. **TAUT Production**, 7 p.m., Squires Student Theatre: Through 6-9.

Vet Med Thirteenth Annual Research Symposium, 8 a.m. to 4:30 p.m., 100 Vet Med.

Saturday, 9

YMCA Hike, 9 a.m., Lancaster House parking lot. **Museum Family Field Walk**, 9 to 11 a.m., Pandapas Pond. **TAUT Production**, 7 p.m., Squires Student Theatre: Through 6-9.

Monday, 11

Last Day to Resign.

Wednesday, 13

"With Good Reason," 7 p.m., WVTF: Topic TBA.

Friday, 15

Salary and Wage Paydate. **Summer Arts Festival Program**, 6 p.m., Henderson lawn.

Saturday, 16

YMCA Hike, 10 a.m., Lancaster House parking lot.

Wednesday, 20

"With Good Reason," 7 p.m., WVTF: Topic TBA. **Family and Work/Life Resources Program**, 12:15-12:45 p.m., 217 Squires.

Thursday, 21

Staff Senate, noon, 1810 Litton-Reaves.

Friday, 22

Summer Arts Festival Program, 6 p.m., Henderson lawn.

BULLETINS

Museum Family Field Walk set

There will be a salamander search at Pandapas Pond with Carola Haas, professor of fisheries and wildlife Saturday, June 9, from 9 to 11 a.m. Participants will look under logs and stones for salamanders and also observing local turtles, frogs and newts. Call the Museum of Natural History at 1-3001 to pre-register. The walk is appropriate for ages 5 to adult. Minors will need adult accompaniment. Meet at Pandapas Pond at 9 a.m. at the fishing deck on the pond.

Orientation and advising preview scheduled

There will be an orientation and advising preview for all academic advisors and staff members who work with entering

students and their parents during Summer Orientation on Wednesday, June 27, in the Bowman Room, at the Jamerson Center. The activities begin at 8:30 a.m. and continue until 3 p.m., with continental breakfast and buffet lunch.

Register by June 14 at university.studies@vt.edu. The program is coordinated by the Dean of Students Office and the University Academic Advising Center.

Women participants needed for study

Participants are being sought for a study involving working women with physical limitations who require advice on dressing and finding clothing.

The study requires participants with any type of physical

limitation in their upper body, limitations that have an impact on the styles of clothes they wear, and those who are challenged to find comfortable and appropriate clothing to wear to work.

The research study is being conducted in the clothing and textiles area in the College of Human Resources and Education. All information will be completely confidential.

Participants will be provided with a packet of information regarding advice on dressing and finding clothing for people with physical limitations.

Contact Kate Carroll at kacarrol@vt.edu, Doris H. Kincade at kincade@vt.edu, or call 1-6832, 1-7637, or 961-5305.

Research participants sought for Internet-based self-help program

By Sally Harris

A professor and graduate student in the Department of Psychology are seeking participants for research they are conducting of an Internet-based self-help program for trauma victims.

Michiyo Hirai, graduate student, and George Clum, professor of psychology, are seeking people who have experienced traumatic events during their lives and who are suffering symptoms that may be related to those traumas. The traumas could include interpersonal violence such as physical assaults, sexual assaults, rape, or burglary; the witnessing of violent acts such as severe accidents or suicide; man-made accidents such as car, farm, or factory accidents or explosions; natural disasters such as tornadoes, hurricanes, earthquakes, floods,

or avalanches; occupation-related traumatic events such as those encountered by fire fighters, police officers, or medical professionals; or any event that involved actual or threatened death or serious injury to the participant or someone else.

Participants must be experiencing any of the following symptoms: repeated recollections or nightmares of the event, including images, thoughts, or perceptions; repeated flashbacks of the event; fear or anxiety on encountering things that remind the person of the event; increased heart rate, dizziness, sweating, or other physiological reactions to things that remind the person of the event; avoidance of thoughts or feelings associated with the event; or avoidance of things, places, activities, or people that remind the person of the event.

After an initial telephone interview,

participants will be assessed and assigned randomly to either an eight-week intervention group or a 16-week wait-list group. The purpose of the two groups is to compare individuals who receive immediate intervention with people who wait. The on-line intervention consists of education about the effects of trauma, causes of continuing problems, skills for managing anxiety associated with the trauma, and skills for overcoming problems resulting from the trauma.

The research will help determine whether Internet-based treatment will reduce trauma-related symptoms and emotional distress, increase self-confidence in being able to deal with stressful situations, and improve coping skills.

Participation in the program will probably require about three hours per week for eight weeks on the Internet program. Several steps have been taken to ensure the privacy of the information provided on the Internet and any files resulting from that information, and all information will be kept confidential. Although results of the study will be published or presented for scientific purposes, the participants' identities will not be revealed in any description in such publications.

Participants may withdraw from the study at any time.

Those interested in participating should e-mail Hirai at mhirai@vt.edu. Include a contact telephone number for an initial telephone interview.

VIRGINIA TECH

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equipment, which the institute received as a Center for Excellence in Bioinformatics. It enhances the hardware and funds research to build and prototype problem-solving environments in the computer science department and metabolic simulation software at VBI."

The second award in the bioinformatics area aims to enhance state-wide collaboration. According to Sobral, "VBI is the commonwealth's shared bioinformatics resource. So, a bioinformatics consortium was formed by the vice provosts for research at Virginia Tech, George Mason University, the University of Virginia, and Virginia Commonwealth University to coordinate collaborations in bioinformatics and genomics, using the shared base provided by the commonwealth's investment in VBI. VBI's portion of the bioinformatics consortium's proposal to the CTRF was for the infrastructure to support the collaboration—such as extra bandwidth and equipment for the computational grid needed to do research collaboration."

The Virginia Bioinformatics Consortium received \$1.5 million to build the infrastructure.

Virginia Tech received a major award to enhance manufacturing state wide. A new Center for High Performance Manufacturing at Virginia Tech received \$4.3 million over three years from the CTRF, matched by \$4.61 million from Virginia Tech and participating companies. The principal investigators are F. Frank Chen, Lawrence professor of manufacturing systems engineering with the Grado Department of Industrial and Systems Engineering; Ron Kander, former associate professor of materials science and engineering; and Al Loos, professor of engineering science and mechanics at Virginia Tech. Partners are James Madison University, where Kander is relocating as a department head; and Virginia State University and the College of William and Mary, where there are also participating faculty researchers.

The major thrust of the Center for High Performance Manufacturing is to enhance Virginia's research infrastructure for agile and lean manufacturing. The team's objectives are to 1) assist state manufacturing firms in becoming high-performance producers by providing a

"one-stop source" of manufacturing research in strategy, design, and analysis for launching new products and facilities, or re-engineering existing manufacturing systems; and 2) to enhance manufacturing research competitiveness of Virginia universities in the federal marketplace by building the expertise to address the "Grand Challenges" identified in *Visionary Manufacturing Challenges for 2020* by the National Research Council.

Areas of research and development of enabling tools and methodologies will include re-configurable manufacturing and assembly systems, supply chain engineering, advanced composites fabrication, and rapid prototyping and tooling.

BOARD

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program. Under the new policy, tuition can be waived for a total of 12 credit hours from fall semester to summer II. Part-time salaried employees will also be able to waive tuition costs for up to six credit hours per year with no more than three hours per semester.

GM

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Smart Road partnership with the Virginia Department of Transportation and the Federal Highway Administration," President Charles Steger said.

Jon Hankey, leader of the institute's Advanced Product Test and Evaluation Group and Tom Dings, institute director and long-time driving safety researcher, will serve as the project principal investigators. "This agreement constitutes a great new opportunity for us to participate in cutting-edge research and help shape the design of future vehicles," Hankey said.

Although the transportation institute, the largest research center at Virginia Tech, has conducted significant research sponsored by private companies, this agreement constitutes the largest such agreement in the history of the organization. "This alliance is very important for the institute and the Smart Road," Dings said. "It provides a long-term base of funding that complements our funding from public sources and helps to ensure the continued success of the Smart Road for years to come."

EMPLOYMENT

CLASSIFIED POSITIONS

The following classified positions are currently available. More details of these positions, specific application procedures/position-closing dates may be found on the Personnel Services web site at <http://www.ps.vt.edu>. Available positions are also listed on the Job Line, a 24-hour recorded message service. For information on all job listings, call 1-5300. Some of the following positions include state benefits. Positions with numbers beginning with a "W" are hourly and do not include state benefits. Individuals with disabilities desiring assistance or accommodation in the application process should call by the application deadline. Closing date for advertised positions is 1 p.m. Monday. An EO/AA employer committed to diversity.

FULL TIME

Administrative Staff Assistant, 000731J, Pay Band 3, Pamplin College of Business.
Applications Analyst, 001080S, Pay Band 4, AIS.
Assistant Manager, 000514H, Pay Band 3, RDP/Owens Food Court.
E-commerce Project Manager, 006813S, Pay Band 6, Web Application R/D.
Electrician, 000580F, Pay Band 3, Physical Plant.
Event Planner, 001928J, Pay Band 3, UUSA.

Housekeeping Assistant Supervisor, 000552H, Pay Band 1, RDP/Owens Dining Center.

Housekeeping Worker, 000268H, Pay Band 1, RDP.

Housekeeping Worker, 001631Y, Pay Band 1, DBHCC.

Instructional Technology Systems Integrator, 007766S, Pay Band 6, Educational Technologies.

Interpreter for Deaf, 007472J, Pay Band 3, Dean of Students.

Laboratory Specialist, 007707B, Pay Band 3, CE.

Laboratory Specialist, 007245M, Pay Band 3, Biochemistry.

Laboratory Specialist Advanced, 007735M, Pay Band 4, BSE.

Large Animal Supervisor, 006998M, Pay Band 4, Veterinary Teaching Hospital.

Office Services Specialist, 004497F, Pay Band 2, Purchasing.

Olympic Sports Equipment Manager, LC000016J, Pay Band 3, Athletics.

Photography Manager, 002415S, Pay Band 5, University Relations/Visual/Broadcast Communications.

One full-time food-service position available.

Program Support Technician, 005239J, Pay Band 3, Forestry.

Programmer Analyst, 001643F, Pay Band 5, Budget/Financial Planning.

Sous Chef, 000940H, Pay Band 3, RDP/Southgate Bake Shop.

User Services Assistant, 006245M, Pay Band 3, AHRN Information Technology.

PART TIME

Administrative Assistant, W023132S, Pay Band 2, University Relations.

Animal Care Technician, W022190M, Pay Band 2, Veterinary Teaching Hospital.

Front Desk Technician, W023256M, Pay Band 2, Veterinary Teaching Hospital.

Government Documents Assistant, W023251Y, Pay Band 2, University Libraries/Technical Services.

Housekeeping Worker, W022335Y, Pay Band 1, DBHCC.

ICU Vet Technician-large Animal, W022218M, Pay Band 2, Veterinary Teaching Hospital.

Office Services Specialist, W023255J, Pay Band 2, CHRE.

Pharmacist, W020095J, Pay Band 5, Health Center.

Pharmacist (Relief), W022501M, Pay Band 6, Veterinary Teaching Hospital.

Program Support Technician Senior, 004154R, Pay Band 3, CCMS.

Switchboard Operator, W020821M, Pay

Band 2, Veterinary Teaching Hospital.
Visual Resources Curator, W022616S, Pay Band 3, Art/Art History.

OFF CAMPUS

Landscape Maintenance Worker, W023253J, Pay Band 1, Forestry.

Program Support Technician, 006235M, Pay Band 3, VCE—Rockbridge County.

Radio Announcer, W020800L, Pay Band 3, University Relations/WVTF Radio.

Research Specialist Senior, 006504R, Pay Band 4, CMI.

FACULTY POSITIONS

INSTRUCTIONAL

Foreign Languages/Literatures. Assistant/Associate/Full Professor. Contact: J. C. Ulloa, 331 Major Williams (0225). Review begins Oct. 15.

NON-INSTRUCTIONAL

VCE. Extension Agent, Agriculture/Natural Resources. #FA519, Surry Co. Contact: Steve Umberger, 121 Hutcheson (0437). Review begins June 28.

VCE. Extension Agent, 4-H Youth Development. #FA610, Orange Co. Contact: Robert Ray Meadows, 121 Hutcheson (0437). Review begins June 28.

VCE. Extension Agent, Family/Consumer Sciences. #FA661, Planning District 6. Contact: John Dooley, 121 Hutcheson (0437). Review begins June 28.

University Unions/Student Activities. Assistant Director, Student Activities for Programs. Contact: Nicki Cantrell, 225 Squires

(0138). Review begins immediately.

Virginia Tech Transportation Institute. Senior Research Associate. Contact: Cindy Wilkinson, 3500 Transportation Research Plaza (0536). Open until filled.

Virginia Tech Transportation Institute. Research Associate. Contact: Cindy Wilkinson, 3500 Transportation Research Plaza (0536). Open until filled.

Corps of Cadets. Assistant Commandant of Cadets. Contact: Capt. Don White, 143 Brodie (0213). Open until filled.

University Outreach. Associate Provost, Outreach Program Development. Contact: Jane Swan, 145 Donaldson Brown (0175). Review begins June 18.

Athletics. Athletic Trainer. Contact: Pam Linkous, 359 Jamerson (0502). Deadline is June 25.

Athletics. Assistant Women's Soccer Coach. Contact: Pam Linkous, 359 Jamerson (0502). Open until filled.

Scholarships/Financial Aid. Senior Associate Director for Client Services/Compliance. Contact: Lisa Shires, 222 Burruss (0222). Open until filled.

Judicial Affairs. Assistant Director of Judicial Affairs. Contact: Jennifer Calhoun, 151E Henderson (0277). Priority consideration given to applications received by June 15.

Institute for Policy Outreach/Center for Public Administration/Policy. Research Associate. Contact: Joseph Rees, 104 Draper Rd. (0520). Open until filled.

Alumni Relations. Assistant Director, Alumni Relations. Contact: Thomas Tillar, Alumni Hall (0102). Open until filled.

Library training program takes top award

By Clara B. Cox

Virginia Tech's University Libraries' Staff Training and Development Program has received the SOLINET Outstanding Library Programs Award for Continuing Education and Staff Development from the Southeastern Library Network Inc.

The Southeastern Library Network, which serves the states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia and the Caribbean, recently presented the award to Brenda Hendricks, training coordinator, who accepted it on behalf of University Libraries.

The award recognizes the exceptional efforts of libraries and groups of libraries in the Southeast. Judges look at the effective use of resources, innovation of the project, profundity of impact on the target population, and stability of the model for replication by other libraries or consortia.

In selecting Virginia Tech for the award, the judges noted that the library training program "supports the full range of training needs for over 150 faculty and classified staff members, operating with a limited budget and staff" and "makes use of local experts from the faculty and community as well as commercial training services." Judges also pointed to the program's wide range of workshops and training opportunities.

According to Hendricks, "The program is developed from a needs assessment with all staff members providing input and includes a variety of training events delivered with different instructional methods." Topics covered by the program during 2000 included a diversity awareness, sexual harassment, health, conflict resolution, and computer software.

Hendricks said that on-campus faculty

members, SOLINET trainers, in-house staff members, attorneys at law, and various community leaders led the workshops and that financing involved a collaborative effort with various colleges and internal library organizations and departments.

The Southeastern Library Network is a not-for-profit library cooperative providing resource sharing for the educational, cultural, and economic advancement for the region it serves.

VT Airport authority formed

By Dave Nutter

The Board of Visitors has authorized the university to become a member of a regional airport authority and enter into a long-term lease with the authority for use of the Virginia Tech Airport.

Raymond Smoot, vice president for administration and treasurer, said the airport is "a significant community asset which can only reach its full potential if local governments join with the university in its future development and operation."

The 2001 General Assembly approved legislation authorizing the establishment of an authority. The Montgomery County Board of Supervisors and the Christiansburg Town Council have approved participation in the authority. The Town of Blacksburg still must approve final participation.

The Virginia Tech Airport, which officially opened in 1931, was originally used to train cadets. Over the years its focus has evolved into a facility that serves the broader community.

WORRALL

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a university research fellow in the transportation institute, and a fellow of the Center for Organizational and Technological Advancement. During the past six months, he has worked with the National Academy of Public Administration to develop a Joint National Academy/Virginia Tech Center for E-Governance.

Merola said that Worrall will begin his two-year appointment on July 1, replacing Elyzabeth Joy Holford, who announced her resignation effective July 31.

Merola and Bohland praised Holford's work at the center. "Elyzabeth did a remarkable job in her two years as interim director of the Northern Virginia Center," said Merola. "She will be sorely missed."

Bohland said, "The university owes Holford a great debt of gratitude for her work in moving our graduate center forward in very positive directions. Her talents and leadership have helped us begin the transformation that will eventually enable us to have a stronger teaching, research, and outreach presence in Northern Virginia."

The university announced plans in early March to re-assess and re-focus its Northern Virginia programs in terms of their relevance to four core interdisciplinary research areas: development and applications of information technology, urbanization and built environments, policy and governance, and education and leadership.

Virginia Tech's Northern Virginia Center has more than 2,200 graduate students enrolled in 45 degree programs at its Falls Church facility.



VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

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Editor
John Ashby, 1-6961

Assistant Editor
Christina French, 1-8538

Production Manager
Melinda Shaver, 1-8524

Business Manager
1-8819

Letters to the editor and questions for "Ask *Spectrum*" should be addressed to the editor, 102 Media Building, Virginia Tech, Blacksburg, VA 24061.

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New effort to increase coal production announced

By Lynn Nystrom

In three months, Virginia Tech researchers in the mining and minerals engineering department have received two U.S. Department of Energy (DOE) awards to enhance mineral- and coal-production techniques, create higher-value products, lower energy costs, and improve environmental sustainability of the mining industry.

The DOE has just announced a \$3-million award to Virginia Tech and to West Virginia University to establish a Center for Advanced Separation Technologies (CAST).

This award follows on the heels of another DOE award to Virginia Tech to demonstrate the commercial potential of new coal-production techniques developed by university researchers.

Virginia Tech's partnership with West Virginia University to create CAST is based on both universities sustaining long histories of strong research and teaching programs in mining and minerals engineering.

Congressman Rick Boucher, representing southwest Virginia, was instrumental in securing both of these awards, as well as Alexandria Congressman James Moran and Senator John Warner.

"I am extremely pleased that the U.S. Department of Energy has awarded federal funding to CAST. Virginia Tech and West Virginia University have accumulated a great deal of expertise in the areas of separation science and technology, particularly as applied to energy and environmental research," Boucher said.

CAST researchers, concerned about the reliance by the U.S. on imported energy needs, believe they can help the mining industry increase the production of coal and improve the efficiency of producing minerals in an environmentally acceptable manner by developing advanced separation technologies.

These technologies can be used to separate ash and sulfur dioxide-forming minerals from coal. They can also be used to remove impurities

from mineral concentrates.

Roe-Hoan Yoon, professor of mining and minerals engineering and director of CAST, said "it is important to reduce the costs of producing fuels in the U.S." In 1999, the U.S. imported \$67.7 billion of oil, accounting for 25 percent of the total trade deficit. And this number jumped to approximately \$109 billion for the year 2000.

Conversely, the trend for the U.S. exportation of coal has declined. The U.S. sold 102 million tons of coal valued at \$4.2 billion in 1992 to overseas markets. By 1999 the export level fell to a record low of 57 million tons, valued at only \$2.1 billion.

Yoon believes the U.S. can rely on more of its own assets. U.S. coal accounted for the generation of some 51 percent of the electricity usage in the U.S. in 1999, and the retail price of this coal was estimated to be \$111 billion, according to the *U.S. Coal Supply and Demand 1999 Review*. With improved separation technologies, coal usage would increase, he said.

"The advanced separation technologies to be developed at CAST can be used to recover the coal that currently sits in refuse ponds due to the high processing cost. At the same time, these refuse ponds will be cleaned-up, minimizing the environmental impact of mining," Yoon said. He hopes to also see these technologies exported to China and India where much of the mined coal is burned without cleaning. "This would help increase the combustion efficiency and thereby reduce the global sulfur dioxide emissions."

Yoon and his colleagues have already made strides in this research arena in the past 20 years leading to the DOE's decision to fund CAST. The best known is the Microcel™ technology, used widely in both the coal and mineral industries to improve recovery rates.

Yoon has served as the director of the Center for Coal and Mineral Processing since 1988. CAST will now replace that center.

UNIVERSITY

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recognizes its bias toward the beneficial use of knowledge. We have a tradition of strong undergraduate education with a special emphasis on professional development. The application of knowledge is manifested in the creation of the Virginia Tech Corporate Research Center and the university's policies and culture that serve to commercialize discoveries or patents quickly. A "Putting Knowledge to Work" philosophy is manifested in the Extension tradition of infusing campus discoveries into practice.

The creation of new knowledge that will benefit society is at the heart of our mission. The distinction between basic and applied research has become more blurred. New areas of scientific investigation are interdisciplinary in nature. The walls around research institutions—educational, government, or corporate—are more transparent than ever. Yet, the processes of discovery, scientific inquiry, and scholarship inform all aspects of the educational enterprise.

2. THE VIRGINIA TECH CULTURE

In order to achieve a position of educational leadership, Virginia Tech fosters an atmosphere of intellectual excitement among faculty, staff, and the greater university community. We challenge students, including undergraduates, to pursue the discovery of new knowledge. We value the contribution of research and scholarship to the instructional process. We believe there is a linkage between the excitement of the classroom and the excitement of "Eureka." We recognize that academic inquiry fuels creative scholarship, which fuels the intellectual atmosphere of the classroom and the learning process.

We value the ability to educate the whole person. Through the undergraduate residential learning experience, students have opportunities for leadership and community service. They discover the value of responsibility, self-discipline, community service, and understanding of others. It exposes students to new cultures, social diversity, and new ways to see the world around them. We value heuristic education, which demands that students learn by doing in the classroom, on the job, or through service.

However, if there is one attribute that distinguishes Virginia Tech from all but a few of the nation's thousands of higher education

institutions, it is the interconnected-ness—the interactivity—of the university to the society and constituencies it serves. Virginia Tech is not a citadel of cloistered learning. We believe that universities are most viable when they are interactive, when they reflect and respond to the problems and challenges of their societies.

The outreach mission of a land-grant university is central to the university's pertinence, relevance, and connectedness. Outreach takes many shapes: from continuing-education programs for working professionals to financial-aid counseling for urban poor persons, from training new mayors to aiding reforestation efforts on the African continent.

In recent years, outreach and public service have transitioned from off-campus coursework to become the holistic and reciprocal application of knowledge to strengthen individuals, communities, businesses, and even whole economies. Today, Virginia Tech is an economic development catalyst. The university welcomes that responsibility. Virginia Tech aggressively pursues the commercialization of patents. Through the Corporate Research Center, we promote entrepreneurial activity either among faculty or those wishing to engage faculty. The university encourages faculty/industry relationships. Faculty members maintain sensitivity to real-world problems and advancements and develop networks for student opportunity. These activities address real-world problems, lead to major research advancements, and develop important networking for student opportunities.

3. A VISION FOR THE FUTURE

Human enlightenment is not self-taught. We see not by the light of our own lamps. While

our vision of tomorrow is an extension and reflection of yesterday's vision, a major expansion of the research enterprise is necessary to become one of the nation's leading universities. Our strategy for strengthening the academic enterprise and challenging inquiring minds is based on the notion of the relevant land-grant university. However, in order to grow and remain viable, we envision new ways of program delivery, innovative strategic partnerships, and creative financial support.

In order to become one of the country's leading universities, we will

- Achieve greater eminence and international prominence in science, technology, engineering, and agriculture, while building recognition in the social sciences, business, education, arts, and humanities.
- Engage the entire university community in our leading strengths through interdisciplinary cross-cutting initiatives. Programs with the greatest potential for excellence will be targeted and given the resources to seek national and international recognition.
- Attract highly qualified undergraduate and graduate students and expand graduate enrollment in order to support research and scholarship.
- Increase sponsored research and scholarly and creative output, and be ranked among the nation's top 30 universities.
- Develop an appreciation of other cultures by expanding our global focus; by increasing international study and research opportunities; by expanding international government, university, and corporate partnerships; and by imbuing an international flavor to curricular offerings.

- Achieve the highest level of technological literacy for our students and faculty. We will individualize and improve instruction and learning by breaking the paradigm of traditional classroom-based learning. We will expand non-traditional methods of course delivery and learning by incorporation of computer-based personalized instruction and networking. We recognize that learning occurs on multiple levels and need not be restricted to classroom instruction.

- Foster leadership and the notion of service among the entire university community through the curriculum and through personal examples, but especially among undergraduates. The university's motto, "*Ut Prosim*" (That I May Serve), compels us to promote service to society at many levels.

- Continue to nurture the residential college experience within the greater university through our academic colleges and departments. We recognize and cherish our size. Our comprehensive and varied program offerings create opportunities not available at smaller institutions. A large university affords myriad options for intellectual and cultural stimulation, professional development, service, social development, and career advancement.

- Recognize that diversity of peoples enriches the learning experience. We will seek a campus climate welcoming to all. We will increase underrepresented groups among our students, faculty, and staff.

- Strike a balance among teaching, research, and outreach. While distinct and different, they stimulate the synergy that molds our unique academic enterprise. Maintaining the quality of Virginia Tech's instructional component is one of our overarching goals.

- Be known for excellence in residential instruction, for advanced research with beneficial applications, for the creation and advanced applications of information technology, for delivery of targeted post-baccalaureate education for working professionals, and for addressing the needs of specialized constituencies.

Our vision for the future is simple: we will continue to do things that matter and that have a profound impact on our changing world—whether it is in the classroom, the laboratory, or a village in a developing country.

Virginia Tech
Blacksburg, VA 24061
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