

SPECTRUM

Virginia
Tech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

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TODAY'S EDITION
See page 2 for placing
items on university
Event Calendar.

University employees invited to Farm, Family Showcase

By Mary Ann Johnson

Everyone from Virginia Tech is especially invited to the third-annual Farm and Family Showcase, Thursday to Saturday, September 4 to 6.

University employees can attend free of charge by displaying the Virginia Tech parking hangtag or showing their Hokie Passport. Those who do not have the hangtag or Hokie Passport only pay \$5 a vehicle to cover parking and admission.

The Farm and Family Showcase is Virginia Tech's celebration of agriculture and natural and human resources and to show off its many activities at Kentland Farm. It will be open from 10 a.m. to 5 p.m. each day.

"The showcase has something for everyone, not just farmers, and we want to be sure that Virginia Tech faculty and staff members and students get a chance to attend the showcase and see Kentland Farm. To make it easier for everyone at the university to attend, we are going to let them attend free," said Dwight Paulette, director of the showcase.

(See UNIVERSITY on 4)



Draft horses rides provided by area farmers at the showcase offer an opportunity to show their horses and the way farming was done in the past. Activities at the showcase continue through Saturday at Kentland Farm. (J. McCormick)

University unveils new specialty license plate

The university's Office of Licensing and Trademarks has unveiled a new specialty license plate.

The third annual "Crazy for the Hokies" sweepstakes was announced at the same time the new plate, officially known as the "Crazy-for-the-Hokies' New Plate," was displayed.

This is the third Virginia Tech specialty plate that will be available to residents of Virginia. Currently, plates incorporate the school's shield logo and the official seal. These two Virginia Tech plates are the number-one sellers of all college and university plates. Virginia Tech is in first place with 10,523 sold each year while the University of Virginia is in second place with 4,679. Last year, the university made over \$137,490 from the sales of these plates, and has totaled \$637,320 over the past 11 years.

The "Crazy for the Hokies' New Plate" sweepstakes also sports a car theme with the winners who are drawn at random receiving \$10,000 in cash. Any Hokie fan can make an

New solid-state power switch safeguards electric service

By Susan Trulove

"The nation's electric grid is operating so close to capacity that many of today's electric load demands for fast and dynamic voltage support cannot be provided fast enough," said Alex Huang, professor of electrical and computer engineering.

Electricity moves across miles in seconds to power manufacturing and utilities nation-wide. But, for all its speed, the loss of just fractions of seconds of electric power is costing the U.S. economy \$100 billion a year.†

To solve the problem, Virginia Tech researchers have developed a high-power semiconductor switch. The invention has earned a 2003 Research and Development 100 Award from *R&D Magazine*, which will announce the "100 most technologically

significant products introduced into the marketplace over the past year" in its September issue. Awards will be presented at a banquet in Chicago on October 16.

Huang, a researcher with the Center for Power Engineering Systems (www.cpes.vt.edu) is the principal developer of the switch, called an Emitter Turn-off (ETO) Thyristor.

"The ETO is a solid-state switch that is suitable for use in high-frequency power converters that can provide fast and dynamic voltage support to our nation's congested power grid," Huang said. It offers fast switching speed, rugged turn-off capacity, and voltage control.

The ETO is a three-terminal integrated-power switch. An optical pulse is applied to turn on current flow with very little resistance.

When it is closed, it can conduct 10,000 amps of current. "This is not your typical switch," Huang said.

The ETO changes from on to off and off to on in less than five microseconds. During switching, the ETO withstands high voltage and high current simultaneously. It is a voltage-turnoff device with real-time current-sensing capability that can be used for control and protection.

"This switch allows us to advance very high power converters from a line speed of 60 Hz to 1 to 3 kHz (kilo hertz) switching at the same power level. This speed allows you to chop the voltage into whatever shape you need," Huang said.

Present technology is the Gate Turn-Off (GTO) Thyristor, the main power switch in

(See SOLID-STATE on 4)



(See PLATE on 2)

Animal, poultry sciences hosts Fulbright scholar from Syria

By Stewart MacInnis

The Department of Animal and Poultry Sciences has been selected by the Fulbright Scholar Program to host Husni Hammade, an associate professor from the University of Aleppo, Syria, for a six-month fellowship. Hammade, an animal scientist, is interested in the use of genomics to evaluate genetic diversity in local birds as a basis for taking advantage of hybrid vigor. He will conduct his research in the Comparative Genomics Lab with Ed Smith, associate professor. His research project will involve the use of genome analysis to determine the effect of molecular relatedness among diverse turkey strains on phenotypic performance.

The project is a collaborative project between Smith and faculty members in the Virginia-Maryland Regional College of Veterinary Medicine, including Bill Pierson and Phil Sponenberg, to characterize domesticated turkey strains that remain very little understood. The Virginia Tech research experience will be used by Hammade to evaluate strains in Syria that can form the basis for developing high performing strains.

Smith's lab has previously hosted a USDA-funded visiting faculty member from the University of Ilorin, and is currently host to a visiting scientist from China who is funded jointly by Virginia Tech and the Chinese government.

In the last three years, Smith's Comparative Genomics Lab has attracted approximately \$1 million in competitive funding to the university for research and educational activities. The latest funding, in partnership with the University of Washington, is a five-year program with co-principal investigator Jake Tu of biochemistry to recruit and prepare post-baccalaureates for graduate training and education in genomics and related sciences. A similar campus-wide program in the biomedical sciences is pending budget revision.

These programs, including his internationally recognized research program

(See ANIMAL on 2)

Board of Visitors Meeting Scheduled

The Board of Visitors will hold its fall quarterly board meeting, August 25 at 1 p.m. in the Board Room of Torgersen Hall (room 2100).

Committees will meet in the morning at the Donaldson Brown Center.

The Academic Affairs Committee meets at 8:30 a.m. in conference room F.

The Building and Grounds Committee meets in closed session at 8 a.m. in the Board Room, and in open session at 8:45 a.m. in conference Room A.

The Finance and Audit Committee will meet in closed session at 7:30 a.m. in the Private Dining Room and at 8:30 a.m. in open session in the Executive Conference Room.

The Student Affairs Committee meets at 9:30 a.m. in conference room C following a tour of the West End Market.

Highlights of the agenda include a new M.A. in communication, the 2004 legislative-appropriation request, employee-recognition program, west-stadium expansion, and by-laws changes. The Ad-Hoc Committee on narrow tailoring will meet at noon in the Executive Conference Room. The board will hold an information session Sunday, Aug. 24 at 2 p.m.

ACTIVITIES

EVENTS

Friday, 22

New Faculty Orientation.
New Graduate-Student Orientation.
International-Student Orientation.

Saturday, 23

Music Event, 7 p.m., German Club. Chamber Music.

Sunday, 24

BOV Meets.

Monday, 25

BOV Meets.
Classes Begin.

Tuesday, 26

Faculty Senate, 5:30 p.m., Hillcrest Dining Room.

Wednesday, 27

"With Good Reason," 7:30 p.m., WVTF.

Friday, 29

Watch for Hokie-News.
Pay Date for Faculty and Staff Members.
Hokie Pride Day. (More information below.)
Last Day to Add.
Music Event, 8 p.m., Squires Recital Salon: Faculty/
Guest Artist Recital.

Sunday, 31

Football, 3 p.m., Lane Stadium: Central Florida.

SEPTEMBER

Monday, 1

Labor Day Holiday for Staff. (Classes Meet)

Tuesday, 2

Art Gallery Exhibit Opening, noon to 5 p.m., Tues.-
Fri.; noon to 4 p.m., Sat. (Through 10-3).

Wednesday, 3

"With Good Reason," 7:30 p.m., WVTF.

Thursday, 4

Farm Family Showcase, Kentland Farm.
731-1289 for information. (Through 9-6).

SEMINAR

Friday, 5

Geological Sciences, 3:30 p.m., 4069 Derring: Peter
Olson, Johns Hopkins University.

Submit your Event Here! (See Below)

Event Calendar sign-up encouraged

All departments and officially registered organizations on campus are encouraged to use the electronic calendar located at <http://calendar.vt.edu/>. Events that are open to the university community should be posted to encourage attendance and to ensure widespread knowledge of the event.

Authorization may be obtained by contacting the calendar coordinator in the Office of University Relations at calendar@vt.edu. Event submissions will be reviewed for appropriateness and edited for clarity and conciseness.

Events sponsored by commercial entities are prohibited.

Hokie Pride Day set for August 29

Hokie Clubs are celebrating August 29 as the third-annual Hokie Pride Day.

The goal of the nation-wide event is to promote pride and enthusiasm in Virginia Tech and the football team. Some of the activities suggested for observing Hokie Pride Day are wearing maroon and orange, flying Virginia Tech flags and decorating vehicles.

For more information, contact J. Pat Green with the Roanoke Valley Hokie Club at 777-1233.

ANIMAL

Continued from 1

to identify and characterize relative variation in eukaryotic genomes, are consistent with Smith's vision that animal science is viewed more broadly than as a career path to veterinary science and animal husbandry. He wants to broaden the image of animal science as a path that also leads to basic and biomedical research.

In 2001 and 2002, he hosted a two-week workshop for high-school science teachers that included not only hands-on laboratory training but also discussions concerning ethical issues arising from advances in genetics, the emerging discipline of bioinformatics, the creation of DNA vaccines, and health-related research going on at the university.

Student move-in traffic information detailed

Nearly 9,000 students and their families are arriving on campus to check into the residence halls through August 24. This will cause a significant change in parking and traffic patterns on campus.

During the five days of check-in, streets and parking lots closest to the residence halls will be designated as "30-minute unloading" and reserved for resident student move-in only. These areas include the following parking lots: Shultz, Owens, Dietrick, Coliseum, Hutcheson and Engel; and the following streets: Turner, Kent, and Washington Streets and the south side of the

Drillfield (War Memorial Gym side) from Sandy Hall up to the library. Employees should not park in these areas. A new change beginning this year: the south side of the Drillfield will be closed to all traffic except for students who are unloading.

All vehicles parked in these areas, other than for the purpose of unloading, will be ticketed to provide space for the move-in process.

Additionally, Washington Street may become a one-way street. Traffic will be allowed to move from west to east (from the Coliseum toward Kent Street and downtown

Blacksburg). Traffic is expected to move slowly along the corridor, and avoiding Washington Street during these days recommended.

Faculty and staff members should park in areas not designated for "30-minute unloading." Areas recommended are C/G section of the Litton-Reaves lot (located behind Litton Reaves Hall off Washington Street) and/or Perry Street/Prices Fork Lots (formerly called B-Lot), located off Prices Fork Rd.

For more information, call Parking Services at 1-3200 or e-mail otparking-resc@exchange.vt.edu.

PLATE

Continued from 1

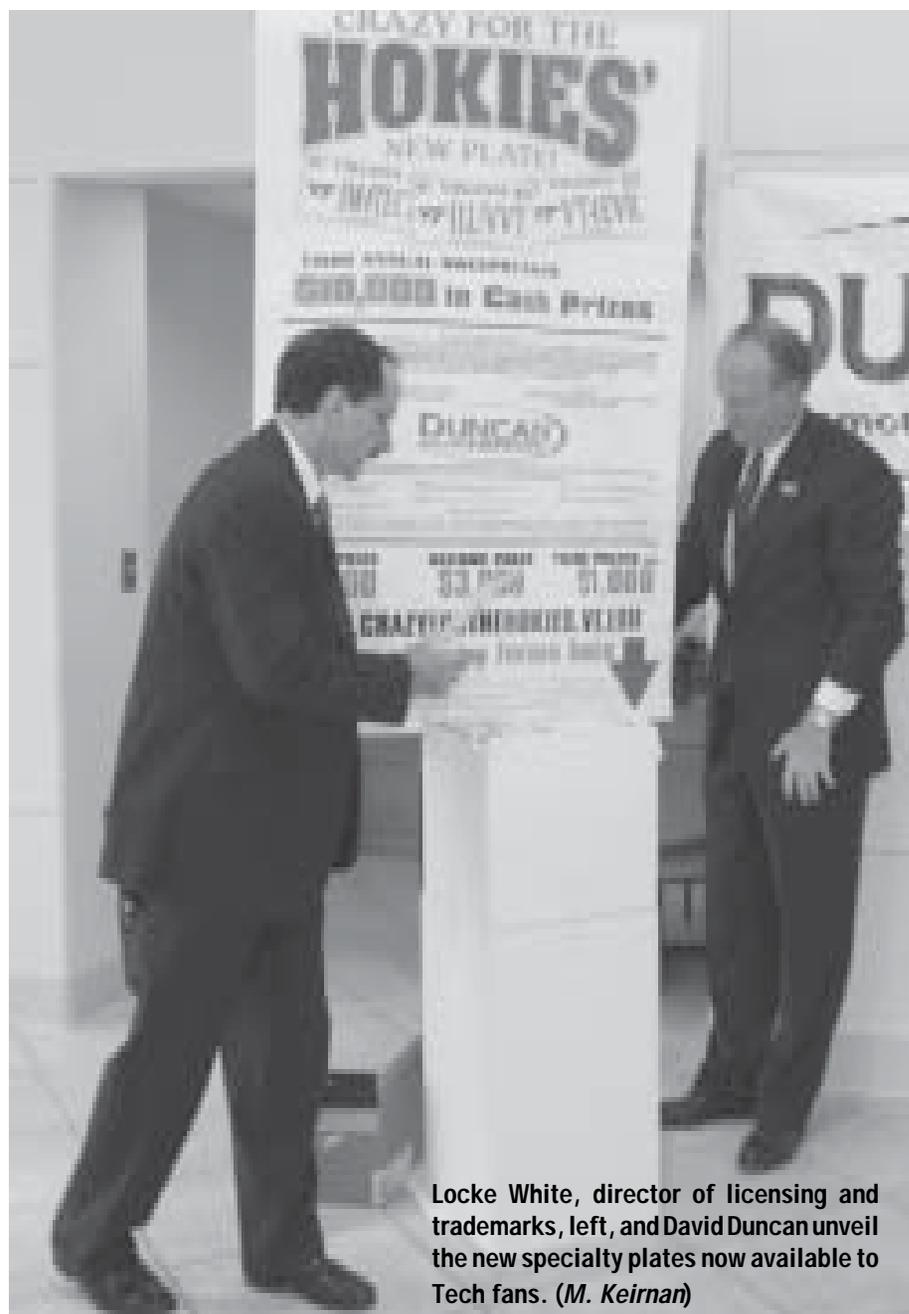
entry form on a postcard or use the official entry form found in every Duncan Automotive Network dealership. Entries can be sent in on any standard postcard by writing in your name, home address, daytime phone number, and the phrase "I am crazy for the new plate." The postcard entries can either be individually mailed to Virginia Tech Licensing (Visitor's Center, Blacksburg, VA 24061), or, to save postage, they can be dropped off in bulk at any Duncan dealership. Official entry forms can also be found at the dealerships. Entries will be taken from August 15 to November 17. There is no limit to the number of entries someone may submit and the sweepstakes is open to all ages.

"We are excited about the new plate as well as teaming with the Duncan Automotive Network to kick off this year's sweepstakes," said Locke White, director of licensing and trademarks. "The new plate should bring in a substantial amount of additional revenue to the university."

First prize for the sweepstakes is \$5,000 in cash, with the second-prize winner receiving \$3,000, and two third-place winners will receive \$1,000 each. The winners will be chosen by a random drawing and will be announced at halftime during the Virginia Tech-Boston College football game on November 22. The winners will be announced on the JumboTron.

During the ceremony, the Office of Licensing and Trademarks also announced a special licensing partnership with the Duncan Automotive Network that will let all their customers "Hokieize" their purchase of any new or used car from any of their dealerships.

For more information, go to www.CrazyForTheHokies.vt.edu.



Locke White, director of licensing and trademarks, left, and David Duncan unveil the new specialty plates now available to Tech fans. (M. Keirnan)

CAMPUS UPDATE

Annual welcome celebration becomes 'Hokie Hi'

Fall Orientation this year has been transformed into "Hokie Hi"—Welcome Week.

The new welcome celebration, created by the Hokie Hi Committee, includes eight days of activities ranging from movies to music.

Last April, Student Activities joined with Student Programs to build the committee that would later include Athletics, Student Government, Virginia Tech Union, Black Student Alliance, the Marching Virginians, the Alumni Association, and the faculty. These groups worked over the summer to coordinate events during the first week of school. The result was a unified activities schedule and marketing campaign named "Hokie Hi" after the verse in the Old Hokie Song.

All the events are centered around the Hokie Spirit Picnic on August 24 (see accompanying article). Thanks to the work of Student Programs and the Athletic Department, this year's picnic will be held in Lane Stadium. For the first time, students will be allowed to enter via the tunnel and touch the Hokie Stone. The picnic will end with a pep-rally inside the stadium where students will hear from coaches, athletes, the Student Alumni Associates, and faculty while enjoying the sights and sounds of Hokie Vision and the Marching Virginians.

Hokie Hi activities began yesterday and will continue through August 29. Highlights include the movie, "Matrix Reloaded," music, and many more activities.

Visit <http://www.rdp.vt.edu/welcomeguide/> or go by the Student Activities Office in 319 Squires for more information.

Hokie Spirit Picnic and Pep Rally Welcome Students to Campus Sunday

By Lori Greiner

Student Programs' Housing and Dining Services has teamed up with the Hokie Hi Welcome Week Committee and the Virginia Tech Athletic Department to welcome students to campus with the annual Hokie Spirit Picnic and Pep Rally on Sunday, Aug. 24 from 4:30 to 6:30 p.m. at Lane Stadium.

A new tradition is expected to emerge from the relocation of the annual picnic from Dietrick Plaza to Lane Stadium. Students are invited to come to Lane Stadium to eat, meet fellow Hokies, and show their school spirit. In addition, students will have an opportunity to walk the tunnel into Lane Stadium and touch the Hokie Stone to become official

Hokies. A pep rally featuring the Virginia Tech athletic teams, the Marching Virginians, the Student Alumni Associates, cheerleaders, and the Hokie Bird will be on hand.

The picnic will feature Blue Ridge barbecue pork, grilled hamburgers, garden burgers, hotdogs, baked beans, a variety of salads, desserts, and beverages.

The annual Hokie Spirit Picnic is open to all new and returning students. Students living on campus with active dining plans will receive picnic tickets from their resident advisors. Students without dining plans, family members, and the general public can purchase tickets at the gate for \$6.50.

Biopesticide workshop in Tanzania brings natural pest control closer

By Susan B. Felker

Natural, environmentally friendly plant-protection products are one step closer to wide-spread use in southern and eastern Africa thanks to a July workshop in Arusha, Tanzania co-hosted by Virginia Tech's Office of International Research, Education, and Development (OIRE).

The workshop's subject was standardization of registration requirements for biopesticides among countries in the region. Officials from national-pesticide-registration bodies in Djibouti, Ethiopia, Kenya, Tanzania, and Uganda participated.

Conventional synthetic chemical insecticides are profitable for manufacturers because they usually kill many kinds of pest insects and consequently have a large market. However, because of their broad spectrum of action, these insecticides can kill beneficial insects such as bees and predators that naturally control pest insects. Another hazard of chemical insecticides arises from the fact that inadequately trained farmers who work without proper protective equipment are often the ones who apply pesticides in the region. Policies that promote the use of biological-control products can help reduce environmental damage and the danger of unintentional human exposure.

Biopesticides are naturally occurring agents that attack and kill a particular target pest through means other than direct toxicity. Many biopesticides are derived from a natural disease of the target pest, for example a specialist fungus or bacterium. Because biopesticides usually only attack a single pest insect, the market within one African country is small. If the same biopesticides were available in many countries, the inherently small markets would multiply, making commercial development more cost-effective and attractive to manufacturers.

Workshop participants developed a document recommending harmonized criteria

for evaluating and registering biopesticides and will be editing draft guidelines. The ultimate goal is to provide registration guidelines that may be uniformly adopted throughout the region, eliminating unnecessary barriers to using biopesticides and stabilizing and enlarging potential markets.

The African Emergency Locust and Grasshopper Assistance (AELGA) project of the United States Agency for International Development (USAID) funded the workshop. Virginia Tech manages AELGA's locust-biopesticide-development project, in collaboration with partner institutions in Kenya,

(See BIOPESTICIDE on 4)

CLARIFICATION

An article in the August 8 issue of *Spectrum* entitled "University forms partnership with Northern Virginia civil-rights foundation" inadvertently omitted history Professor Bunch-Lyons as a key contributor in the Tinner Hill relationship. She is working on a grant with Susan Gooden on oral histories in the area.

EMPLOYMENT

The following classified positions are currently available. Position details, specific application procedures/position-closing dates may be found on Personnel Services web site <http://www.ps.vt.edu>. Positions are also listed on the Job Line, a 24-hour recorded message service. For information on all job listings, call 1-5300. Some positions include state benefits. Positions with numbers beginning with "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.

CLASSIFIED POSITIONS

FULL TIME

Five food-service positions available.
Administrative/Systems Specialist, 008180H, PB 3, Student Programs.
Administrative Assistant, 002682B, PB 3, Center for Gerontology.
Administrative Lead Support, 001585M, PB 3, Geography.
Anesthesia Technician, 008097C, PB 4, VTH.
Assistant Director Development Research, 001557S, PB 4, University Development.
Associate Director of Facilities Management, 008175H, PB 5, Student Programs.
Budget Analyst Senior, 002075S, PB 5, BFP.

Business Manager, 000095H, PB 5, Student Programs.
Capital Budget Manager, 007995S, PB 5, BFP.
Enrollment Services Coordinator, 008172M, PB 4, CALS.
Experiment Support Senior, 008169B, PB 3, VTTI.
Fiscal Technician, 008177B, PB 3, VTTI.
Housekeeper, 001189G, PB 1, UUSA.
Housekeeping Lead Worker, 001181G, PB 1, UUSA.
Housekeeping Worker, P002005G, PB 1, Physical Plant.
Personnel Transaction Specialist, 007533S, PB 3, Personnel Services.
Post Award Administrator, 004377S, PB 4, Sponsored Programs.
Powerline Worker, 006524F, PB 3, Facilities.
Research Specialist, 008131C, PB 3, CSES.
Small Animal ICU Technician, 008095C, PB 4, VTH.
Sous Chef, 002946H, PB 3, Student Programs.
Staff Internal Auditor, 007794S, PB 4, IAMS.
Telecommunications Field Technician, 006852A, PB 3, CNS.
Unit Manager, 007961H, PB 5, Student Programs.

PART TIME

Administrative Assistant, W023527K, PB 2, VBI.
Fiscal Technician, W020810M, PB 3, VTH.
One food-service position available.

Housekeeping Worker, W023573G, PB 1, Athletics.
Laboratory Specialist, 008128J, PB 3, APS.
Laboratory Technician, W023474M, PB 2, CVM.
Pharmacy Assistant, W022097C, PB 2, Schiffert Center.
Radiologic Technologist, W022238M, PB 3, Schiffert Center.

OFF CAMPUS

Assistant Controller, CCCCCC, PB 0, VTF.
Director of Nursing, 002178M, PB 4, EMC.
Nursing Shift Supervisor, 002996M, PB 2, EMC.
Office Assistant, 004125M, PB 2, ESAREC.
Program Coordinator, 008176M, PB 3, 4-H, Fairfax CE.
Wildlife Worker, 006643B, PB 2, Biology.

FACULTY POSITIONS

INSTRUCTIONAL

Veterinary Cooperative Extension. Equine Health. Contact: Craig Thatcher, 0442.
Department of Political Science. Assistant Professor. Contact: Timothy W. Luke, 1-6633.

NON-INSTRUCTIONAL

Virginia Tech Women's Center. Interim Director. Contact: Patricia Hyer at hyerp@vt.edu



VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

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OIA completes reorganization; De Datta named associate provost

By Susan B. Felker

To complete its restructuring process, Outreach and International Affairs (OIA) has named a new associate provost, consolidated several units under one banner, and made several personnel changes, all effective August 10.

S.K. De Datta, director of the Office of International Research, Education, and Development (OIREd), has been named associate provost for international affairs. "During the past year, most of Tech's international program units have been assigned to Outreach and International Affairs, making it necessary to expand Dr. De Datta's oversight responsibilities. The title of associate provost for international affairs underscores our commitment to the increasingly important role international programs will have across all three mission areas of the university," John E. Dooley, OIA vice provost said.

As associate provost for international affairs, De Datta will continue to supervise OIREd faculty members and will assume administrative oversight for the Center for European Studies and Architecture (CESA) in Riva San Vitale, Switzerland. De Datta will also provide leadership for a campus-wide effort to create, articulate, and implement a comprehensive international strategy for the university.

Additional changes have taken place over the past few months within Outreach and International Affairs, which now also includes the Commonwealth Campus Centers, Economic Development, Outreach Program Development, and the Southside Virginia Initiative.

Several programs have been consolidated under Outreach Program Development (OPD). Continuing Education and Public Service Programs combined to form a single program unit. Other OPD programs are the Center for

Organizational and Technological Advancement (COTA), English Language Institute, Donaldson Brown Hotel and Conference Center, Hotel Roanoke and Conference Center, Outreach Program Services, and two units transferred to OIA effective July 1, 2003: the Service-Learning Center and Upward Bound/Talent Search. The consolidation of these program units enables their faculty members to provide better service to clients and customers and helps them negotiate the complexities of the university's structure.

A national search will be launched this autumn to fill the leadership position for this area, left vacant by the retirement of J. Douglas McAlister.

OIA is also redesigning the Commonwealth Campus Centers in Hampton Roads, Richmond, Roanoke, and Abingdon to represent all three parts of the university

mission: teaching, research, and outreach. Each center will soon work with a regional outreach council to connect with and utilize local leadership and expertise. A council is being piloted in Richmond this fall.

Leadership at two of the centers has also changed following the retirement of Doug Strickland. Charlotte Anders will be interim director of the Roanoke center. Kris Peter will serve as interim director for Virginia Tech programs at the Southwest Virginia Higher Education Center in Abingdon.

Economic development activities are now centered in the Office of Economic Development, formerly Economic Initiatives and Market Research, under the leadership of Ted Settle. International economic-development specialist Chad Miller has been transferred to the office from Public Service Programs to add depth to services and to act as liaison with the Office of International Research, Education, and Development.

Big coal hauler inspires science teachers

By Annette Calhoun

Elementary, middle, and high-school educators learned firsthand where electricity comes from, in Virginia Tech's "Coal to Electricity" energy-education program. Now in its seventh year, the summer series examines extraction and transportation of coal, electricity generation and transmission, environmental issues, energy economics, and environmental topics such as land reclamation.

Seventeen science teachers from around the state were selected to attend the free, two-week program held July 13 through 25. Jointly sponsored by Virginia Tech and corporate and governmental agencies, teachers develop

lesson plans for their classes that address the energy standards included in the Virginia Standards of Learning in science.

But this educational series isn't just a lecture course. While visiting a surface mine in Wise County, they also learned how to drive a two-story-high, 150-ton coal hauler.

"For the teachers, it's like looking up at the Empire State Building," Mary Quillen, program founder and director said. "The thought of handling a million-dollar piece of equipment is a little intimidating at first but once teachers climb inside, they discover they can drive with the best."

Quillen who arrived at Tech in 1996, now runs the only graduate program of its kind in the nation for science teachers about how coal is mined and used to generate electricity.

Academic backing for the program comes from the Department of Teaching and Learning. John Burton, department chair, said he was an early supporter of Quillen's ideas because "far too many people simply don't understand where electricity comes from. Many people have a negative opinion about coal mining even though coal is used to produce over 50 percent of our electricity and is of great economic importance in our region."

UNIVERSITY

Continued from 1

The showcase will feature activities and exhibits that benefit those in the agricultural and forest industries as well as homeowners and landowners. In addition to the Tech exhibits, there will be displays, seminars, and programs by many Virginia businesses.

Kentland Farm is a 1,700-acre working farm located eight miles west of the Virginia Tech campus off of McCoy Road and adjacent to the New River. It's Virginia Tech's largest land-based educational resource supporting the Colleges of Agriculture and Life Sciences and Natural Resources teaching, research, and outreach programs. Visitors will have a chance to take bus or walking tours to see Kentland Farm. Work there focuses on many of the state's major agricultural crops and

livestock species. In addition, the facility supports programs related to environmental concerns, sustainable agriculture, management of natural renewable resources, alternative crops, and improved agricultural economic efficiencies.

The showcase will feature an extensive trade show of equipment and products.

There will be a special children's activities center, including a corn maze, and possible animal births at the birthing center.

The showcase is sponsored by the Colleges of Agriculture and Life Sciences, Liberal Arts and Human Sciences, Natural Resources, and the Virginia Maryland Regional College of Veterinary Medicine, Virginia Agricultural Experiment Station, Virginia Cooperative Extension, and the University Outreach and International Affairs Program Development.

Go to web site <http://www.farmandfamily.vt.edu> for more information.

SOLID-STATE

Continued from 1

use. The GTO is reliable and inexpensive, but requires a "snubber" capacitor to protect it in the turnoff process. The snubber uses significant power itself, increases the size of the switch and the complexity of energy-recovery circuits. In addition to being a complicated gate design, it slows the on-off process.

"The significance is the ETO allows you to reduce energy storage elements and size (conductors, capacitors), which reduces the size, the weight, and the cost of the power converter," Huang said.

An insulated gate bipolar transistor (IGBT), which doesn't require a snubber, was developed in the early 1990s. It offered improved control and reliability, but it is less useful in high power applications. The ETO is a hybrid of the GTO and the IGBT—"so is proven reliable," Huang said.

The U.S. Department of Energy's Energy Storage Systems Program, managed by Sandia National Laboratory, first funded Huang's research on what are known as "flexible AC transmission systems (FACTS). Because the ETO has the highest power handling capacity among all solid-state switches, it was deemed useful for such high-power application as FACTS devices and the U.S. Navy's new electromagnetic aircraft-launch system. The Tennessee Valley Authority is currently funding research by Virginia Tech to use the ETO in a high-power converter for dynamic voltage support in transmission and distribution grids.

Material limitations and the high cost of power electronic devices have restricted the wide spread use of power electronics in utility-transmission-and-distribution grids. The ETO is a key enabling technology for lower-cost power-electronic systems. "Deregulation has created new demands on the transmission infrastructure, straining reserves. Power-electronic systems, such as the ETO, can improve quality and capacity of the transmission grid by 25 to 60 percent," said Jing Leng of Solitronics, a spin-off company started in Blacksburg to commercialize the ETO. Solitronics licensed the product from Virginia Tech Intellectual Properties Inc., and several patents are pending.

"We are losing hundreds of millions of dollars due to the loss of electrical power," Huang said. But with the ETO, you can respond to demand faster."

BIOPESTICIDE

Continued from 3

Ethiopia, Senegal, and France. Larry Vaughan of OIREd and Tessema Megenasa of the Desert Locust Control Organization for Eastern Africa (DLCO-EA) coordinated the effort.

OIREd is a university-wide office that pursues donor-funded collaborative research projects around the world and oversees study-abroad opportunities. The OIREd research-and-development portfolio currently comprises \$21 million worth of projects in over 30 countries world-wide.

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