

SPECTRUM

TODAY'S EDITION
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seminars.

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

<http://www.spectrum.vt.edu>

VOLUME 26 NUMBER 11 FRIDAY, FEBRUARY 20, 2004

Associate deans named in College of Science

By Sally L. Harris

Lay Nam Chang, dean of the College of Science, has announced the appointment of two associate deans for the college.

Sheryl B. Ball, associate professor of economics in the College of Science, has been named the College of Science's associate dean for curriculum, instruction, and advising.



BALL

Nancy Ross, professor of mineralogy in the College of Science, has been named the college's associate dean for research, graduate studies, and outreach.

Ball will provide leadership for curricular development, developing a process for awarding scholarships that involves faculty members, alumni, and donors and keeps departments informed, heading up recruiting and placement programs, representing the college on university committees in the fields of curriculum, instruction, and advising, and managing the Office of Student Records, advising, and career planning.

Ball received a bachelor's degree, master's degree and Ph.D. from Northwestern University. She joined the faculty at Virginia Tech in 1992 and was promoted to associate professor in 1999. Before that, she served as assistant professor at the Boston University School of Management. She also served as a visiting



ROSS

(See ROSS on 3)

University expands international outreach to Germany

By Karen Gilbert

President Charles Steger and *Technische Universität* (TU) Darmstadt, Germany President Johann-Dietrich Worner have signed a five-year agreement for the exchange of students, faculty and staff members. The agreement will foster collaborative research between both universities, particularly in the context of the Partnership for the Advancement of Collaborative Engineering Education (PACE) program.

Virginia Tech has received of \$244 million in grants, software, hardware and training from the PACE program to date. PACE is a partnership of General Motors, Electronic Data Systems, UGS-PLM, Sun Microsystems, and 26 universities world-wide. Participating universities include Virginia Tech, TU Darmstadt, Massachusetts Institute of Technology, Purdue University, and the University of Michigan. For more information about PACE, see <http://www.pacepartners.org>.

The agreement establishes an exchange program that enables Virginia Tech engineering students to take all of their senior-year courses at the TU Darmstadt and graduate on schedule.

Students interested in participating in this student-exchange program must demonstrate proficiency in the German language. Virginia Tech offers a sequence of six German courses to enable students with no previous German-language experience to attain proficiency. In addition, TU Darmstadt offers a German-language-and-culture summer school in

(See UNIVERSITY on 4)



Johann-Dietrich Worner, president of TU Darmstadt, Germany (left) and Charles Steger, president of Virginia Tech, shake hands after signing an agreement for a five-year student- and faculty-exchange program between the two universities. (J. McCormick)

Comments on the State of University Research in Virginia

By Charles W. Steger to the Education Committee of the Senate Finance Committee
February 12, 2004

Mr. Chairman and members of the committee, I know that we all share a deep and abiding interest in creating a bright future for the Commonwealth of Virginia. A critical element of that is a robust economy and job opportunities for our present and future citizens.

Countless studies have demonstrated the relationship between the ability to attract and retain corporations and to create start-up companies and university-based research activities. The presence of a research enterprise gives a region a competitive advantage in the world marketplace.

The past several decades have witnessed a change in corporate structure. While we have been fortunate enough to retain some major corporate headquarters, we have also lost our share. Companies that operate in multiple states within this nation and in many countries around the world have seen shareholder interest readily displace any sense of loyalty to a particular state.

In the past, the Commonwealth of Virginia has not placed a high priority on expanding our research programs. In the

(See GENERAL ASSEMBLY on 4)

GENERAL ASSEMBLY UPDATE

Esker receives \$500,000 National Science Foundation CAREER Award

By Sally L. Harris

Alan R. Esker, assistant professor of chemistry in the College of Science, has won a five-year, \$500,000 National Science Foundation CAREER award designed to encourage promising young researchers.

Esker's research is aimed at understanding the properties of polymer-stabilized magnetic nanoparticles (MNP's) at surfaces and interfaces and providing insights into using MNP's for biomedical diagnostics and the treatments of diseases such as cancer and blindness resulting from macular degeneration. In particular, this research

focuses on studying the interaction of MNP's with "biological soaps," or lipids, which include triglycerides, cholesterol, and phospholipids, the principal components of cell membranes.

The ultimate goal of the research is to harness MNP's for hyperthermia, or the use of heat to alter the physiological state of cells. One example of this would be to trap drugs inside MNP's and use a magnetic field to deliver them to the exact site of the diseased cells. Subsequently, an alternating magnetic field could then be used to generate heat with

(See ESKER on 4)

Research growth up by 6.6 percent

By Susan Trulove

Research expenditure growth at Virginia Tech grew 6.6 percent to \$247.8 million for fiscal year (FY) 2003, the university Controller's Office reported to the National Science Foundation (NSF) in late January.

In FY 2002, the university reported total research-and-development expenditures of \$232.6 million to the NSF, up from \$216.3 million in 2001.

Federally sponsored research expenditures grew 18.3 percent to \$98.1 million in FY 2003, and industrial expenditures grew 18.7 percent to \$24.7 million, but state and local support of research dropped 7.9 percent—more than \$5 million. Sponsored research includes projects paid for by federal agencies, such as NSF's support of programs ranging from development of new materials to creation of 3-D design software for architects and engineers, and by industries, such as the development of sensors for transformers, being supported by a consortium of electric companies.

"It is faculty members who undertake programs and raise the funds to support them," said Jim Blair, interim vice provost for research. "What is significant and worthy of high regard by Virginia's citizens is that research activity and funding at Virginia Tech has increased despite a reduction in faculty numbers and increased teaching loads as a consequence. Departments, centers, and faculty members among themselves are cooperating to make good things happen here."

Faculty members are submitting fewer

(See RESEARCH on 4)

ACTIVITIES

EVENTS

Friday, 20

TA Event,

8 p.m. (Feb. 19 through 21 and 24 through 28), Squires Studio Theatre: "Ear, and I, and Silence."

Saturday, 21

Horticulture Garden Winter Seminar, 10 a.m. to noon, Greenhouse complex classroom.

Sunday, 22

Engineers' Week Begins.

TA Event, 2 p.m. (Feb. 22 and 29), Squires Studio Theatre: "Ear, and I, and Silence."

Tuesday, 24

Art Gallery Exhibit Opening (Through 4-2). VTU, 7:30 p.m., Burruss auditorium: "Titanic."

Wednesday, 25

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

Friday, 27

Last Day to Drop.

Music Event, 8 p.m., Squires Recital Salon: Chamber Music.

Saturday, 28

Horticulture Garden Winter Seminar, 10 a.m. to noon, Greenhouse complex classroom.

Music Event, 3 p.m., Squires Recital Salon: Chamber Music.

MARCH

Monday, 1

Pay Date for Faculty and Staff Members.

University Council, 3 to 5 p.m., 1045 Pamplin.

Women's Month Begins.

Horticulture Garden Winter Seminar, 6 to 8 p.m., 409 Saunders.

Wednesday, 3

"With Good Reason," 7:30 p.m., WVTF: "The Ethics of Bioprospecting," with David Kingston.

SEMINARS

Friday, 20

Geosciences, 3:30 p.m., 4069 Derring: Kerry Sieh, California Institute of Technology.

MSE, 3:30 p.m., 100 Hancock: Robert Pond Jr., Loyola College.

Thursday, 26

AdvanceVT, 4 p.m., 1045 Pamplin: Louise Kellogg, University of California, Davis.

Friday, 27

Geosciences, 3:30 p.m., 4069 Derring: Louise Kellogg, University of California-Davis.

MSE, 3:30 p.m., 100 Hancock: Patricia Athey, PPG Industries Inc.

MARCH

Friday, 5

South Atlantic Humanities Center, 3 p.m., 132 Lane: Sally N. Johnston.

MSE, 3:30 p.m., 100 Hancock: Kevin Hemker, Johns Hopkins University.

BULLETINS

Wright centennial pilot to speak February 23

Kevin Kochersberger, one of two Virginia Tech alumni who attempted to recreate the Wright brothers' first flight during the recent "100 Years of Flight Celebration," will speak about his experience at the university on February 23 at 4 p.m. in Hancock auditorium.

A licensed pilot and an associate professor of mechanical engineering at the Rochester Institute of Technology in New York, Kochersberger received all three of his mechanical engineering degrees from Virginia Tech. He worked with the Wright Experience on research and design of the 2003 reproduction of the Wright Flyer for the centennial celebration, and led testing of the replica at NASA's Langley Full Scale Tunnel in Virginia.

Kochersberger teamed with Virginia Tech animal science alumna Terry Queijo, an American Airlines pilot, to fly the reproduction of Orville and Wilbur Wright's four-cylinder glider at Kitty Hawk, N.C., on Dec. 17, 2003.

Wallenstein, Carter to speak Brown decision

Peter Wallenstein from the History Department and Elaine D. Carter, from the Christiansburg Institute, will provide the Virginia and local history view of the Supreme Court's 1954 *Brown v. Board of Education* decision Wednesday, Feb. 25, from 3 to 5 p.m. in room 1000 Torgersen Hall.

A reception will follow the program. For more information, contact Susan Ariew (saar@vt.edu or 1-7040).

Fine Dining at Old Guard offered on Fridays

Students can now take advantage of fine dining at the

Old Guard in the Donaldson Brown Hotel and Conference Center Monday through Friday. Fine dining at the Old Guard is a collaborative effort of the Office of Student Programs, the Donaldson Brown Hotel and Conference Center, and the Department of Hospitality and Tourism Management (HTM).

Dining is offered to students as part of their dining plans. Faculty and staff members and the general public can also dine. All entrees are priced below \$10.

Fine dining at the Old Guard is available Monday through Friday from February 16 through April 24. Seating is available from 5 p.m. until 7:30 p.m. Reservations can be made Monday through Friday by calling 1-9540 between 4 and 8 p.m. To make reservations for groups of more than eight, call 1-8000 (Monday through Friday) or e-mail oldguard@vt.edu.

For more information, visit www.studentprograms.vt.edu/dining/finedining.php.

Tech offers research showcase

The College of Engineering is hosting the Northern Virginia Engineering Showcase on March 5 at the Marriott Tyson's Corner in Vienna. The showcase will provide a review of a broad cross-section of advanced technology and basic science research at the university.

Faculty presentations will provide those who attend with a clear idea of the directions and capabilities of the many research groups in the college.

The guest speaker during lunch will be Bob Lambert, corporate senior vice president of new technology and new media for the Walt Disney Company. He is responsible for identifying and developing new technologies and business opportunities that will impact the Disney organization in the

years ahead, and integrating these new media initiatives into company strategies and practices.

Space for the comprehensive showcase is limited to 90 attendees. Interested participants may register on line at <http://www.eng.vt.edu/nves/>. More information is available by contacting Doug Eckel at 1-3347 or via e-mail at deckel@vt.edu.

Perlin to lecture on history of wood

John Perlin, author of "A Forest Journey: The Role of Wood in the Development of Civilization," will lecture on "The Role of Wood in World History," March 15 at 3 p.m., in the Fralin Biotechnology Center auditorium.

Internationally known for speaking out about the worldwide forest loss, Perlin will discuss how deforestation accelerates erosion, the greenhouse effect, and the expansion of deserts.

A reception will follow the lecture in Fralin atrium. For more information, contact Robert Bush at 1-8834 or rbush@vt.edu.

ODK soliciting scholarship applications

Omicron Delta Kappa is soliciting applications for its annual scholarships and awards recognizing leadership on the Virginia Tech campus. Opportunities are available for faculty and staff members, administrators and students.

Applications for all awards are available on line at <http://filebox.vt.edu/org/odk/scholar.htm>. The deadline for applications to be received is March 19. For more information, contact Brandon Bull at wbull@vt.edu or 230-7485.

South Atlantic Humanities Center seminars set

The South Atlantic Humanities Center (SAHC) at Virginia Tech is sponsoring several seminars this spring. SAHC is a partnership of the Virginia Foundation for the Humanities, Virginia Tech, and the University of Virginia.

SAHC focuses on the U.S. South Atlantic from a regional and transatlantic perspective. It explores and preserves the rich heritage of a region stretching from Virginia to the Virgin Islands. It engages artists and performers, writers and filmmakers, teachers and scholars, research institutes and state humanities councils to examine how a sense of place shapes the lives of South Atlantic residents ([/www.southatlanticcenter.org](http://www.southatlanticcenter.org)).

Currently scheduled presentations are on the following Fridays:

March 5, 3 p.m.: "Revitalizing General Education through Regional Humanities

Centers" by Sally N. Johnston, director, Leadership Program.

April 2, 3 p.m.: "Societies and Soirees: Musical Life in the South Atlantic Region, Yesterday and Today" by Michael Saffle, professor, Humanities Program.

April 30, 3 p.m.: "Islands and Southlands: The Power of Place in the South Atlantic" by Pablo Davis, program director, South Atlantic Humanities Center, Virginia Foundation for the Humanities.

All presentations will be held in 132 Lane, and are free and open to the public.

Additional presentations may be scheduled. To present, participate in SAHC, or get more information, contact Anita Puckett at apuckett@vt.edu or 1-9526.

Nominations open for Alumni Awards for Outreach Excellence

Nominations are now being accepted for the 2004 Alumni Awards for Outreach Excellence, which recognize faculty members for outstanding achievements that contribute to the university's outreach mission. Nominations are also open for eight new awards for excellence in outreach, one at each college. The Virginia Tech Commission on Outreach and International Affairs added these awards this year.

The Alumni Awards for Outreach Excellence, one for individual achievement and one for team achievement, focus on sustained outstanding contributions of faculty members working to realize economic and social transformation.

Nominations for these awards, which are sponsored by the Commission on Outreach and International Affairs with support from the Virginia Tech Alumni Association, close on March 19. Alumni, students, faculty members, department heads, directors, deans, and external clients may submit nominations.

The recipient of the individual achievement award will receive a monetary award of \$2,000 and a plaque, while the team-achievement winners will share \$2,000 and a plaque. Recipients of these university-wide awards are automatically inducted into the Academy of Outreach Excellence at its spring meeting.

(See NOMINATIONS on 3)

CAMPUSUPDATE

Child-care questionnaire distributed on campus

By Clara B. Cox

An AdvanceVT questionnaire on child care has been distributed to faculty and staff members and graduate students, according to Peggy Layne, AdvanceVT program coordinator. Child care was identified as an important issue for the Virginia Tech community during the AdvanceVT workshop held last month.

"The information we collect via the questionnaire will be used to evaluate the need for child care and the best way for the university to assist in meeting that need. I encourage everyone to take the time to complete the questionnaire and return it to us. We will share the results with our university leaders," Layne said.

For those employees who did not receive a copy of the questionnaire, it is available on line at www.advance.vt.edu. Paper copies may be obtained in person from the AdvanceVT office in 236 Burruss Hall (0180) or by request via e-mail at advancevt@vt.edu.

AdvanceVT is a National Science Foundation-sponsored program designed to increase the participation and advancement of women in academic science and engineering careers through comprehensive and creative strategies aimed at institutional transformation. Information about the program is available at www.advance.vt.edu.

Digital History Reader receives NEH funding

By Jean Elliott

A new project, the *Digital History Reader*, has been sponsored by a grant from the National Endowment for the Humanities (NEH). Funded for \$219,000, the *Digital History Reader* was selected to receive the two-year NEH Exemplary Education Grant from among 172 applications, of which 16, or 9 percent, were funded.

"This project blends several Virginia Tech and College of Liberal Arts and Human Sciences (CLAHS) initiatives and priorities," said CLAHS Dean Jerry Niles. The *Digital History Reader* boasts interdisciplinary collaboration and innovative technology with outreach to other universities and public schools. It also combines global knowledge with national and international modules, and can easily be a stepping stone to investment in future research.

Tom Ewing, assistant professor of history, is the primary investigator for the project and leads a Virginia Tech team that includes nine faculty members from the Departments of History and Teaching and Learning.

"The *Digital History Reader* adds yet another dimension to our already techno-savvy faculty in the Department of History," said Glenn Bugh, chair of the history department. "It dovetails nicely with four other major department projects: the on-line American

history modules, funded by two grants from the Center for Innovative Learning; the digitizing of Civil War-era newspapers for our Center for Civil War Studies; the award-winning Virtual Jamestown project, supported by Mellon Foundation funds; and the department's development of a visionary collaborative Ph.D. proposal on 'Digital History and Geography,' to name the most obvious."

The *Digital History Reader* is made up of two components. "'United States History' provides materials covering important themes and issues from the colonial era to the present. 'Modern Europe in a Global Context,' explores links between European and world history in the late 19th and 20th centuries. The modules are designed for introductory-level survey courses at colleges and universities and for advanced history courses at the secondary level. Educators around the world will have access to the modules through Edsitement, an NEH web site (www.edsitement.neh.gov).

All modules will be designed to include objectives for learning, questions students will be asked to consider, and background historical information; an "archive" of documents with questions to guide students' use of the documents; and a student assessment section

that allows for feedback and evaluates what students have learned.

Faculty members are responsible for developing module content, securing necessary permissions, collaborating on instructional approaches, designing and maintaining appropriate formats, evaluating effectiveness, and disseminating materials over the course of the project. The project team includes Mark V. Barrow Jr., Hayward "Woody" Farrar, Kathleen Jones, Marian Mollin, Amy Nelson, Robert Stephens and Daniel Thorp (all from the Department of History), David Hicks (Department of Teaching and Learning), Eddie Watson (instructional designer), and Huaiying Gao (graduate assistant, teaching and learning).

The project has also contracted with VDS4 (Visual Design Center 4), directed by Truman Capone of the Department of Art and Art History, for assistance in designing a visual identity, web pages, and templates. Support from the College of Liberal Arts and Human Sciences is being used for instructional design and graduate-student assistance. Support from the History Department includes software acquisition, faculty time, and graduate assistants from the master's program in history.

ROSS

Continued from 1

scholar at IMF Institute. She has received Virginia Tech's Alumni Advising Award and the Certificate of Teaching Excellence.

Ball's research falls into three major areas: individual decision making, experimental economics, and game theory. She has published in professional journals, and her work has been supported by grants from the National Science Foundation (NSF) and the National Institute for Dispute Resolution (NIDR). For the NSF grant, she and co-principal investigator Catherine Eckel examined whether the outcomes of economic environments such as markets or negotiations are influenced by participants' social status. With another grant,

she and co-principal investigators Eckel and Scott Midkiff are developing and testing a wireless teaching system to facilitate active learning in large lecture courses. The NIDR grants supported work on negotiations concerning environmental issues and Ball's dissertation research on the winner's curse.

Ball is a member of Virginia Tech's Center for Wireless Telecommunication. She served as strategist and bidder for Virginia Tech in the FCC Local Multipoint Distribution Services auction, designing the university's bidding strategy and getting it approved before the auction. The result was the acquisition of four licenses for university research on LMDS service. She also was a co-principal investigator on a research contract on bidding for satellite-spectrum auctions for Hughes Telecommunications and Space.

Ross will coordinate research activities within the college; find new opportunities for funding faculty research; represent the research aspects of the college at both university and national levels; and manage research, graduate, and outreach administration within the college.

Ross joined the Department of Geological Sciences at Virginia Tech in 2000 after 12 years at University College London, where she had served as a lecturer (assistant professor) and a reader (associate professor).

Her research involves investigation of the factors that control the stability of minerals and related materials under given constraints of pressure, temperature and composition. She uses a number of different experimental techniques in her research, including X-ray and neutron diffraction at high pressure. Recently, Ross and co-workers at Virginia Tech have been using computational models to establish the link between the electron density of a material, its structure, and its reactivity. Ross has been funded continuously since she became a professor, with grants from the Natural Environment Research Council (NERC), the British Council, the Nuffield Foundation, and, most recently, the National Science Foundation (NSF).

Ross obtained her bachelor's degree from Virginia Tech, where she graduated *summa cum laude* and was elected to Phi Beta Kappa and Phi Kappa Phi. She received a graduate fellowship from the University of British Columbia, where she obtained her master's degree, and a graduate research assistantship from Arizona State University, where she obtained her Ph.D.

Ross is a member of the American Association for the Advancement of Science, the American Crystallographic Association, the American Geophysical Union, the

Materials Research Society, and the Mineralogical Society of Great Britain and Ireland, and is a fellow of the Mineralogical Society of America. She has served on a number of commissions, councils and advisory groups for funding agencies such as NERC and the NSF, government laboratories such as Oak Ridge National Laboratory, and societies such as the Mineralogical Society of Great Britain and Ireland, the Mineralogical Society of America, and the International Mineralogical Association.

NOMINATIONS

Continued from 2

Recipients of the newly created college-level awards receive \$500 and a plaque. Individual colleges will set deadlines for their respective awards.

Nominees for all awards should exhibit excellence in the performance of outreach programs, including but not limited to innovation, creativity, program results, impacts, leadership, subject matter expertise, and communication skills. Their work should demonstrate a focused program, planned and implemented to deliver coherent content.

Detailed information on the awards and nomination procedures is available at www.outreach.vt.edu.



VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

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EMPLOYMENT

FACULTY POSITIONS

FACULTY POSITIONS
For information on all faculty listings, go to www.jobs.vt.edu.

INSTRUCTIONAL
Interdisciplinary Studies. Visiting Assistant Professor.
Mathematics Education. Assistant Professor.

NON-INSTRUCTIONAL
Conservation Management. Project Associate (two positions).
Educational Leadership/Policy Studies. Project Associate.
Virginia Bioinformatics Institute. Senior Project Associate.
Hospitality and Tourism. Department Head.
University Development. Director of Annual Giving/Special Gifts (Outreach and International Affairs).
Undergraduate Admissions. Director.

Biomedical Science. Post-doctoral Associate.
Virginia Bioinformatics Institute. Computational Immunologist.
Alumni Relations. Assistant Director.
Marion dePont Scott Equine Medical Center (Leesburg). Assistant Director of Development.
Middleburg Agricultural Research and Extension Center. Director.

Safer visual, auditory cues for elderly drivers is goal of Toyota-funded project

By Liz Crumbley

Toyota Motor Corp. is funding research at Virginia Tech aimed at better understanding the visual and auditory needs of the growing population of elderly drivers in the United States.

The project's principal investigator, Thurmon Lockhart, assistant professor of industrial and systems engineering (ISE) and director of the Locomotion Research Laboratory, said the study will investigate visual changes that affect the way people of different ages view control panels in automobiles, as well as changes in the way drivers hear vehicle warning signals.

As we age, Lockhart noted, our visual acuity—the ability to see details at given distances—declines. This condition, called “presbyopia,” makes it increasingly difficult for people over the age of 65 to focus on nearby objects. As it progresses, presbyopia can pose real safety problems for elderly drivers who find it difficult to read dashboard control panels and instrumentation.

Lockhart will study age-related visual acuity in both daytime and nighttime driving conditions using two test groups, one composed of 28 Virginia Tech students and the other of 28 people aged 65 and older. In addition to investigating how well drivers can see dashboard panels, Lockhart will study other factors including the effects of sunlight and nighttime glare, side-window and rear-window

glare, and the effects of various types of windshield filters and internal and external mirrors.

Working with researchers in Virginia Tech's Audio Systems Laboratory, ISE professor John Casali and research associate professor Gary Robinson, Lockhart also will conduct auditory experiments with the two test groups. As is the case with visual acuity, a significant percentage of the elderly suffer hearing loss. This condition, called “presbycusis,” is characterized by a gradual decline in the ability to hear sounds clearly at certain frequencies and at low decibel levels.

Drivers suffering from presbycusis can find it difficult to interpret auditory warning signals, such as the high-frequency sounds that signal a truck backing up or the approach of emergency vehicles. In addition to simply detecting warning signals, drivers need to be able to tell the difference between a signal that indicates “warning/caution” and “urgent/critical,” Lockhart said.

The Virginia Tech researchers will examine the relationship between the auditory qualities of warning signals and drivers' ability to interpret the sounds, as well as the variations in signal perceptions between young and elderly drivers. Toyota and other automotive companies are interested in developing on-board warning signals that will enhance safety for drivers of all ages, Lockhart said.

Project to help senior citizens access health care

By Netta Benton

The National Institutes of Health (NIH) has awarded funding to computer-science researchers in the College of Engineering for a project aimed at making it easier for senior citizens to access Virginia Department for the Aging (VDA) services on the World Wide Web.

Athman Bouguettaya, associate professor and director of computer science at the Northern Virginia Center in Falls Church, and Denis Gracanin, assistant professor of computer science at the center, will use the two-year \$208,000 NIH grant to develop “middleware.”

In the computer industry, middleware is a general term for any programming that serves to “glue together” two separate programs. Typically, middleware programs provide messaging services so that different computer applications can communicate.

Bouguettaya and Gracanin are developing a graphical user interface for the VDA web

site that will enable users to view and interact with the site through icons, pictures, and menus. They also will incorporate the latest privacy-protection techniques. “Web services are poised to play the same role that data has played in database management systems,” Bouguettaya said.

The healthcare needs of senior citizens are expected to surge as baby boomers start retiring, Bouguettaya said, which will further stress cost-spiraling health-care systems. Recent studies suggest that senior citizens are the fastest-growing group of web users, and advances in web standards and technologies offer a cost-effective way to maintain and use large health-care-information systems.

The researchers will develop a prototype of the middleware that will be posted on both the Virginia Tech and VDA web sites. The prototype will be evaluated and tested by a focus group of senior citizens selected by VDA and the university.

ESKER

Continued from 1

the MNP's to melt the stabilizing polymer coating and release the drug to the specific site, thereby avoiding damage to healthy tissue.

This work is done in collaboration with Judy S. Riffle, professor of chemistry and the director of the Macromolecular Science and Engineering Program.

Esker earned a bachelor's degree and a Ph.D. in chemistry from the University of Wisconsin, Madison. He served as an intern

at Procter & Gamble and a post-doctoral researcher at the *Max-Planck Institut fuer Polymerforschung* in Germany as well as a guest scientist at the National Institute of Standards and Technology.

A member of the Virginia Tech faculty since 1999, Esker is also a member of the Center for Adhesive and Sealant Science and the Macromolecular Science and Engineering Program faculty. He has received numerous honors and awards, including the 3M Untenured Faculty Award and the Omnova Solutions Signature University Award.

GENERAL ASSEMBLY

Continued from 1

much-touted emerging areas of biotechnology and nanotechnology, for examples, we are playing catch-up. These fields will drive the creation of the next generation of new technologies and companies, and the gap between Virginia and our competition is growing.

Success in these and other areas can only be achieved when there is a predictable and sustained pattern of investment.

We have had neither of the two.

Another point I know you appreciate, but still worth stating, is that the various elements of our costs-resources equation are closely interrelated. To illustrate, consider the issue of tuition and recent budget cuts. At Virginia Tech even with tuition increases, we lost 125 faculty members. Class sizes have grown and as a result, faculty members have less time to develop and submit research proposals. We estimate that this last round of cuts will cost us \$10 million per year in research funding. Proposal submission for the current year has not grown, and even that is a tribute to the hard work of our faculty, because fewer faculty members are writing the same total number of proposals.

The consequences of last year's cuts are just now being felt. And while I know there is sensitivity to tuition increases, I assure you there will be far greater concern by students and families who cannot get their courses to graduate on time. I already see it happening.

As a result of this changing environment it is getting more difficult to recruit promising new faculty members. Just this week I was meeting with a candidate for a key position at the university and his greatest concern was the prospect for funding in the future. Just three weeks ago I was visited by one of our key faculty members who advised me he was ready to leave. The perceived climate for higher education in the commonwealth is becoming a

major factor in career decisions of current and potential faculty members.

Last year SCHEV produced a well-done report on the Condition of Research in Virginia. It was revealing and useful in helping all of us to appreciate the reality of our current circumstance.

Two points were particularly instructive. Compared to other states we have a very low number of members of the National Academy of Science on the faculty.

Second, at the time the report stated that no Virginia university was in the Top-50 NSF listing. Virginia Tech subsequently moved back to 49th but I must also note that before the cuts in the early 1990's we were 44th.

The unfortunate comparison occurs when we view what is happening here in the context of other parts of the world. Last spring I was in Seoul, South Korea, visiting with the minister of communications. They, as well as other Asian countries, are making significant investments in their universities and research institutions. I

fully expect that if we do not sustain our investment in research and development, they will soon be exporting intellectual property to the United States in addition to automobiles and cell phones.

This last round of budget cuts has eliminated any flexibility in our budget to invest in the future. This failure to invest will cost many times the savings as a result of lost opportunities.

We are all facing a situation in which there is a denial of the reality that it takes a certain amount of resources to operate globally competitive institutions. Low appropriations and low tuition together are a recipe for mediocrity. My greatest fear is that much damage will have to occur before people understand the consequences of this situation, and at that point we will not be able to recover in any reasonable period of time.

I commend your efforts to address these issues so that future generations of Virginians will not have to suffer because of our inaction today.

RESEARCH

Continued from 1

proposals to funding agencies but requesting larger awards, Blair said. In addition to sponsored research, expenditures reported to NSF include institutional and state support of research in the form of faculty and staff time and the support of agricultural-experiment stations state-wide.

The NSF ranks universities based on expenditures, but has not yet reported the 2002 ranking. Virginia Tech was 49th in 2001. The fiscal year ends June 30. It takes until the end of January to gather and report the previous fiscal year's expenditures to NSF, and takes NSF another year to report standings because almost 600 colleges and universities are included in the survey.

In 2000, President Charles Steger challenged the university to achieve top-30 status by 2010. The higher ranking will provide resources for teaching programs as well as research that will improve the quality of life in the state and the nation, he said.

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Darmstadt the summer before the student's senior year to help enhance language skills.

A Virginia Tech mechanical-engineering student is enrolled in the TU Darmstadt summer program in June 2004. An electrical-engineering student plans to attend the entire 2004-2005 academic year.

TU Darmstadt is one of Germany's most highly respected universities, offering programs in engineering, natural sciences, social sciences and humanities to 19,000 students. In 2003, the university's mechanical-and-processes-engineering program was recognized as the best program in its field in Germany.

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