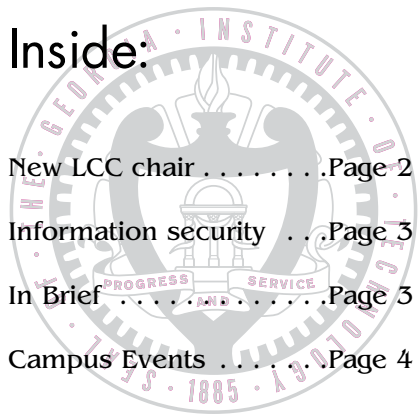


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THE WHISTLE

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THE GEORGIA INSTITUTE OF TECHNOLOGY

To improve its distance learning, Iran seeks advice from Tech

Modernizing a system that serves 300,000 citizens

Sean Selman
Institute Communications and Public Affairs

Last month, Joseph DiGregorio, director of Tech's Professional Education, International Partnerships, was one of 10 academicians invited to participate in an education mission to Iran.

The mission, sponsored by the National Research Council and the National Academy of Sciences, was an effort to help elevate the state of K-12 and post-secondary education in Iran. The academicians represented universities throughout the United States.

The journey marked DiGregorio's first trip to Iran, but he said it was an important one for humanitarian reasons, and it should lead to several mutual-collaboration projects between Iranian and American institutions of higher learning.

"I'm a firm believer that education is the world's great equalizer," DiGregorio said. "I went there to help improve their educational system, which could lead to more and better jobs for the Iranian people, and eventually to peaceful co-existence in the Middle East."

DiGregorio was asked to assist Iran in formulating a strategy for distance learning throughout their country. Other members of the education mission addressed the country's integration of research and education, vocational and technical training, computer-based education and other topics.

"The invitation to visit Iran was extended by the Iranian Academy of Sciences, which is the counterpart of our National Academy of Sciences," DiGregorio said. Iran faces several issues regarding distance education, he said, including a lack of resources to implement appropriate distance-learning technologies and the lack of

Iran continued, page 3

Researcher lights path for early cancer detection

Using nanoparticles to 'tag' diseased cells

Larry Bowie
Institute Communications and Public Affairs

Biomedical scientist Shuming Nie is testing the use of nanoparticles — called quantum dots — to dramatically improve clinical diagnostic tests for the early detection of cancer. The tiny particles glow and act as markers on cells and genes, giving scientists the ability to rapidly analyze biopsy tissue from cancer patients so that doctors can provide more effective therapies.

Nie, a chemist by training, is an associate professor in the Department of Biomedical Engineering and director of cancer nanotechnology at Emory's Winship Cancer Institute. His research focuses on the field of nanotechnology, in which scientists build devices and materials one atom or molecule at a time, creating structures that take on new properties by virtue of their miniature size.

The basic building block of nanotechnology is a nanoparticle, and a nanometer is one-billionth of a meter, or about 100,000 times smaller than the width of a human hair.

Nanoparticles take on special properties because of their small size. For example, if you break a piece of candy into two pieces, each piece will still be sweet, but if you continue to break the candy until you reach the nanometer scale, the smaller pieces will taste completely different and have different properties.

Until recently, nanotechnology was primarily based in electronics, manufacturing, supercomputers and data storage. Nie predicted, in a paper published in the journal *Science* several years ago, that the first major breakthroughs in the field will be in biomedical applications, such as early disease detection, imaging and drug delivery.

"Electronics may be the field most likely to derive the greatest economic benefit from nanotechnology," Nie said. "However, much of the benefit is unlikely to occur for another 10 to 20 years, whereas the biomedical applications of nanotechnology are very close to being realized."



Shuming Nie

photo by Nicole Cappello

Nie was recently recruited from Indiana University as a Georgia Cancer Coalition Distinguished Scientist. While at Indiana, Nie and his colleagues constructed a nanoscale semiconductor crystal. Also called a quantum dot, this particle is made of semiconductors with a

Dots continued, page 2

Race for the prize

In the final days of his bid for re-election to the U.S. Senate, Max Cleland stopped briefly at Georgia Tech to rally a group of students to get out for the November 5 mid-term election.

Organized by the College Democrats at Georgia Tech, Cleland spoke briefly about his introduction into politics, during an era where "young people were supposed to get involved in politics." He joked that everyone should "grab a friend ... provided they're a Democrat" and head to the polls on Election Day.

In the end, however, Cleland lost to his Republican opponent, Saxby Chambliss, who tallied 53 percent of the vote.



photo by Nicole Cappello

“QUOTE—
UNQUOTE”

“The Bush administration disengaged from the Korean powder keg in March 2001 and later assigned North Korea to the axis of evil. The current diplomacy, which consists of organizing collective economic sanctions while shunning North Korea, may ultimately produce the results it says it wants, but the early returns are not very promising.”

—John Endicott, professor in the School of International Affairs, in a joint editorial on the instability of Northeast Asia.
(*International Herald Tribune*)

“This is always an arms race. We shore up the defenses of the Internet, and the attackers shore up their tools.”

—Rich DeMillo, dean of the College of Computing, on the recent efforts by hackers to disrupt Internet servers using so-called ‘denial of service’ attacks.
(*CNN.com*)

Literature, Communication and Culture names new chair

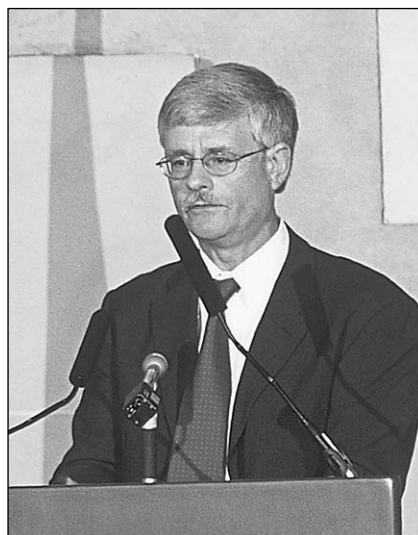
Elizabeth Campell
Institute Communications
and Public Affairs

Last week, Ivan Allen College named Kenneth J. Knoespel the new chair of its School of Literature, Communication and Culture (LCC), effective January 1, 2003.

“Ken brings a substantial history of commitment to interdisciplinary scholarship and service to LCC, Ivan Allen College and the Institute,” says Sue Rosser, dean of Ivan Allen College. “He is someone who has maintained a substantial research agenda at the same time he has worked hard with students, colleagues and alumni. He was involved in writing Georgia Tech’s Strategic Plan over the past several years and also led the 10th anniversary celebration for the Ivan Allen College.”

The School’s 52 full-time faculty members provide undergraduates with an array of communications courses as well as a wide range of humanities offerings.

Knoespel currently holds several positions at Tech, including associate dean of Ivan Allen College, McEver Professor for the Program in the Liberal Arts and Engineering, and professor in the School of History, Technology and Society (HTS) and LCC. He is also affiliated with the Program in Cognitive Science in the College of Sciences and the doctoral



New LCC Chair Ken Knoespel, at last year’s 10th anniversary of Ivan Allen College.

program in the College of Architecture.

Knoespel served as interim chair of LCC in 1990-1997. During that time, he participated in building the undergraduate bachelor’s degree in Science, Technology and Culture (STAC), the master’s degree in Information, Design and Technology (IDT), and the Continuing Education programs associated with LCC’s New Media Center. He also negotiated Georgia Tech’s membership in the Newberry Library Renaissance Consortium, which includes the

University of Illinois, Northwestern University and the University of Chicago.

Most recently Knoespel led the launch of the McEver Program in Liberal Arts and Engineering. The program is endowed with a gift by industrial engineering alumnus Bruce McEver, whose support of the liberal arts at Tech stems from his experiences in the humanities as a Tech student. The McEver Program is a series of seminar courses co-taught by faculty from Ivan Allen College and College of Engineering for students from a variety of majors. This semester, Knoespel is teaching a seminar devoted to “Situating Science: Innovation and Creativity in Sites of Science” with Wendy Newstetter from biomedical engineering.

“LCC faculty and students have built exceptional undergraduate and graduate programs over the past ten years,” says Knoespel. “Our programs have become models for interdisciplinary work in Europe as well as in this country. It is exciting to see our work influencing not only the humanities but also the shape of the university at the start of a new century. Our research and teaching in digital media resonates strongly with the broadening identity of Georgia Tech. I’m proud of LCC and Georgia Tech and look forward even more to creating opportunities for our students and celebrating our research.”

Clough to discuss impact of Technology Square at forum

On Nov. 21, the Technology Association of Georgia (TAG) will host a special Georgia Tech-themed program, “Innovations in Development,” featuring President Wayne Clough, Developer Kim King, and Wayne Hodges, vice president of economic development, discussing the Technology Square project and its impact on Atlanta’s technology community.

The event is being hosted by two of TAG’s societies:

the Business and Technology Alliance and the Technology Marketing Association, and is free for TAG members. A special rate of \$10 applies to members of the faculty and staff who bring a copy of this issue.

The program will be held at The Biltmore Hotel beginning at 7:30 a.m. For more information, visit www.tagonline.org or call 404-817-3333.

Dots, cont’d from page 1

limited ability to conduct electricity.

Because quantum dots are so small, their electrons are compacted, causing them to emit light or to act as a fluorescent tag.

Nanoparticle probes can be used as contrast markers in magnetic resonance imaging (MRI), in positron emission tomography (PET) for in-vivo molecular imaging, or they can be used as fluorescent tracers in optical microscopy. These tags trace specific proteins in cells for cancer diagnosis or monitor the effectiveness of drug therapy. Because the dots glow with bright, fluorescent color, scientists hope they will improve the sensitivity of diagnostic tests for molecules that are difficult to detect, such as those in cancer cells, or even the AIDS virus.

“Basically, it is a barcoding technology that can encode genes and

proteins,” Nie said.

Many of the practical applications of nanoparticles are based on the different colors they absorb or emit in the light spectrum as their sizes change. A piece of gold, for instance, appears yellow in color, but appears red at nanoscale size. Broken down even smaller, it could appear to be blue.

Using a spectrum of six colors, and four more colors in the infrared spectrum, scientists are able to finely tune nanoparticles to carry out tracking tasks traditionally accomplished with organic dyes. Nanoparticles are also more desirable than dyes, because dyes fade more quickly, they can be toxic to cells, and they cannot be used together.

Scientists only have to vary the size of quantum dots slightly and they glow brightly in one of 10 available colors. When different-sized dots are embedded in tiny beads made of a polymer material, the color of the

bead can be finely tuned.

Theoretically, these beads could tag a million different proteins or genetic sequences in a process called “multiplexing.”

Nie acts as a senior consultant to Bioplex Corporation, a company spun out of his lab’s research. The company was recently added to the roster of start-ups at EmTech Bio, a business incubator jointly run by Georgia Tech and Emory University.

Scientists, including Nie, are currently studying methods of linking quantum dots to medical drugs or other therapeutic agents to target cancer cells. These dots could serve as “smart bombs” to deliver a controlled amount of drug to a particular type of cell.

Nie and his colleagues are working on methods to deliver nanoparticles into specific kinds of tissues and cells — a process that would make cancer therapy more selective.

Georgia
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A strategy for information security

Last week, the Georgia Tech Information Security Center (GTISC) invited Howard A. Schmidt, special assistant to President George W. Bush and the vice chair of the President's Critical Infrastructure Protection Board, to speak about the Board's draft report entitled, "A National Strategy to Secure Cyberspace." Here, Schmidt (right) speaks with Sy Goodman, a professor in the School of International Affairs.

Schmidt, the former chief security officer for Microsoft, outlined the major findings and recommendations of the draft strategy and encouraged the audience of faculty, students and industry members to critique and question those findings. The Board completed the report after a series of town hall meetings, designed to raise awareness about cybersecurity issues and to solicit input from concerned citizens regarding the strategy.

The draft report and a feedback link are available online for review at www.whitehouse.gov/pcipb, and the public is encouraged to send comments by November 18.



photo by Nicole Cappello

ODK inducts two new faculty members

Known primarily as a student leadership and scholastic honorary society, the Alpha Eta Circle of Omicron Delta Kappa taps a few outstanding faculty and staff each year for membership. Membership in ODK is considered the highest leadership honor available at Georgia Tech.

In addition to 10 student inductees, Arnold Stancell, professor of chemical engineering and Turner Chair in Servant Leadership; and Andrea



Strauss, assistant professor of music and director of bands, were initiated on Nov. 2 at the Wesley Foundation and honored with a dinner immediately following the ceremony.

ODK, founded in 1914 at Washington and Lee University, was the first college honor society of national scope to give recognition and honor for meritorious leadership and service in extracurricular activities and to encourage development of general campus citizenship.

Iran, cont'd from page 1

an infrastructure to support such technology.

"Basically, Iran is at square one when it comes to distance learning. There, 'distance learning' really means 'remote campuses,' where students and faculty come together face-to-face. In addition, they deliver some courses via audiotape, but that's about the extent of their technology.

"We were at least able to tell them what the latest developments are in distance learning here," he added. But regardless of its limitations, DiGregorio said the Iranian system works. This past year, the country taught about 300,000 people through correspondence courses and remote campuses.

DiGregorio's group toured facilities and met with Iranian academicians in Tehran and Shiraz. The National Research Council covered all expenses for the visit, and no state funds were used for the trip, he said.

The National Research Council is part of the National Academies, which also comprise the National Academy of Sciences, National Academy of Engineering and Institute of



Joseph DiGregorio (far left) was one of 10 academicians invited to participate in an education mission to Iran. While at the University of Tehran, he met with professors from Payame Noor University, a distance learning institution for Iran with headquarters in Tehran. At the far right is Debbie Dlugolenski with the Georgia Virtual Technical Institute, a new "virtual campus" established by the Georgia Department of Technical and Adult Education.

Medicine. They are private, non-profit institutions that provide science, technology and health-policy advice under a Congressional charter. The council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering, providing services to the government, the public and the scientific and engineering communities.

For more information...

Distance Learning, Continuing Education and Outreach
www.conted.gatech.edu

The National Research Council
www.nas.edu/nrc

The National Academy of Sciences
www.nationalacademies.org

IN BRIEF:

Tech Athletics picks its official colors

The colors of Georgia Tech's first graduating class have been selected as the official colors for athletics.

The Athletic Association board of trustees, chaired by President Wayne Clough, unanimously approved the color selection — white, old gold and navy blue.

A board committee chaired by Tech alumnus Don Chapman recommended the choice of colors.

"Georgia Tech has had some confusion about its colors for a long time," Chapman said. "For example, back when Bill Curry was head football coach, he had a 'black watch' group that played in black jerseys. A number of alumni have expressed concern about the colors, and the board and the Alumni Association board asked that the colors be clarified. The Alexander-Tharpe board did the same.

"History reveals that the first adoption of colors by Georgia Tech occurred when the classes of 1891 and 1892 adopted white, gold and blue," he added.

All official organizations representing Georgia Tech — athletic teams, band and cheerleaders — will wear uniforms displaying only these colors.

DuPree professors to study travel industry

Georgia Tech has received a grant from AT&T to conduct research in best practices in business continuity and disaster recovery. Tech is one of five universities receiving grants to focus research on one of five commercial sectors, and has been assigned the travel and leisure industry.

Two professors in the DuPree College of Management, Naresh Malhotra, Regents' Professor of Marketing, and Saby Mitra, associate professor of Information Technology Management, will lead the research project.

"This survey has real-world application and the potential to be useful in a number of industries," said Mitra. "The knowledge we create will be useful to AT&T, many other companies, and our students."

The results will be publicly available on the AT&T web site and shared with companies within each industry before the end of March 2003. The research will explore areas such as strategic planning, security policies, risk assessment and back-up plans and procedures.

The grants are based upon a recent survey commissioned by AT&T, that showed about one in four companies in the United States do not have business continuity-disaster recovery plans in place. Of those companies that do have plans, about 20 percent have not tested them in five years. Companies with untested plans face as much risk as those with no plans at all.

Fall Blood Drive

The American Red Cross, Mobilizing Opportunities for Volunteer Experience (MOVE) and the Phi Gamma Delta fraternity will sponsor the Fall Blood Drive, Nov. 18-19 from 10 a.m. — 4 p.m. in the Student Success Center. To schedule an appointment, e-mail move@gatech.edu or call 894-2002. Walk-ups are welcome.

