Researchers fired up over new battery

Deborah Halber
News Office Correspondent

Just about everything that runs on batteries — flashlights, cell phones, electric cars, missile-guidance systems — would be improved with a better energy supply. But traditional batteries haven’t progressed far beyond the basic design developed by Alessandro Volta in the 19th century.

Until now.

Work at MIT’s Laboratory for Electromagnetic and Electronic Systems (LEES) holds out the promise of the first technologically significant and economically viable alternative to conventional batteries in more than 200 years.

Kirk D. Kolenbrander, senior advisor to the president, and electrical engineering professor and director of LEES; and Ph.D. candidate Riccardo Signorelli are using nanotube structures to improve on an energy storage device called an ultracapacitor.

Capacitors store energy as an electrical field, making them more efficient than standard batteries, which get their energy from chemical reactions. Ultracapacitors are capacitor-based storage cells that provide quick, massive bursts of instant energy. They are sometimes used in fuel-cell vehicles to provide an extra burst for accelerating into traffic and climbing hills.

However, ultracapacitors need to be much larger and more expensive to receive the George J. Mitchell Scholarship.

Grad student John Velasco is the first MIT student to receive the George J. Mitchell Scholarship.

New sensor makes splash counting fish

Anne Trafton
News Office

Researchers at MIT have found a new way of looking beneath the ocean surface that could help definitively determine whether fish populations are shrinking.

A remote sensor system developed by Associate Professor Nicholas Makris of mechanical engineering, along with others at MIT, Northeastern University and the Naval Research Laboratory, allows scientists to track enormous fish populations, or schools, as well as small schools, over a 10,000-square-kilometer area — a vast improvement over conventional technology that can survey only about 100 square meters at a time.

“We’re able to see for the first time what a large group of fish looks like,” said Makris, who compared the dramatic improvement to the difference between seeing everything on a television screen and seeing only one pixel.

The new sensor system, described in the Feb. 3 issue of Science, could allow government agencies to figure out what’s really happening to fish populations, which many environmentalists and scientists believe are in rapid decline.

The world’s fish stocks are being depleted at a horrid rate,” said Makris, who attributed declining populations to overfishing, a problem that has been abetted by inaccurate fish counts. “One of the reasons (for the inaccurate counts) is the darkness in the ocean. You don’t know what’s going on.”

Current surveying methods depend on highly localized observations taken from slow-moving research vessels, which provide only a small amount of data about a large shoal. Makris said, “It would be like watching Casablanca and you’re seeing one pixel moving across the screen, and that’s all you get. You can’t figure out what’s going on, it’s way too slow,” he said.

Both the new and old methods rely on sonar, which locates objects by bouncing sound waves off of them. With the old technique, survey vessels send high-frequency sonar beams into the ocean, where they dissipate much like the light from a flashlight shining into a darkened room.

In contrast, the new system uses low-frequency sonar that can travel much greater distances and still return useable signals.

To create the detailed images, the researchers photographed about 15,000 virus particles and ran them through a computer program that compared the photographs and constructed a 3-D model based on common features shared by the images.

The researchers also improved image quality by rapidly freezing the viruses before photographing them. The amorphous ice that forms as a result of the rapid freezing protects and preserves the virus structure, unlike regular crystallized ice, King said.

This project builds on a long legacy of innovation that dates back at least to the Volta in the 19th century.

Researchers have been interested in finding an ultracapacitor.

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President Susan Hockfield yesterday announced that Kirk D. Kolenkener has been named vice president for Institute affairs. He has also been nominated to become the new secretary of the Corporation replacing Kathryn A. Willmore, who will step down from that position early next year, at the end of the academic year.

The Executive Committee of the Corporation last week unanimously approved Kolenkener’s appointment and voted to recommend his election as secretary to the Board of Trustees. Kolenkener will be brought to the trustees’ quarterly meeting in March. He is slated to assume both positions on July 1.

“Kirk has demonstrated a deep commitment to MIT during his 16 years here,” Hockfield said in her announcement, which was sent to the community by email. “He draws on wide-ranging experience as both an administrator and a member of the faculty, and his service to our community has been recognized by Institute-wide awards for distinction in undergraduate teaching and for contributions to student life. Kolenkener has served as senior advisor to the president, acting as chief of staff and policy advisor, since December 2004.

As vice president for Institute affairs, Kolenkener will have overall responsibility for MIT’s internal administrative activities and for coordination of policy issues within the senior administration.

Conference Services, Special Events, the Information Communication Services, and the Reference Publications Office will report to him. As secretary of the Corporation, he would be ex officio a member of the board of trustees. He would oversee the administration of the full range of its operations including membership, quarterly meetings, standing committees and the activities of 30 visiting committees. He is also expected to serve as secretary to the Executive Committee, and in that role manage the flow of issues and decisions between the administration and trustees.

“Over the last 16 years, I have truly fallen in love with MIT,” Kolenkener said. “It is a great privilege to have this new opportunity to serve the Institute, and to work with President Hockfield and the chairman of the Corporation, Dr. Dana G. Foster. The shared values of MIT and this responsibilities are the wonderful people of the MIT community — trustees, faculty, staff and students. I am fortunate to learn much from Kathryn Willmore since I joined the administration, and it is an honor to succeed her in these roles.”

Hockfield has also announced that a search will soon begin to fill a new position in the administration: vice president for research development. This position will take a leading role in coordinating MIT’s communications with external constituencies and audiences, including government and the media,” she said.

Kolenkener, who came to MIT as a faculty member in the Department of Brain and Cognitive Engineering in 1990, moved into the secretarial role in 1998, serving as associate dean and then interim dean. He became special assistant to the president and the chancellor in 2001, before taking on his present position.

Kolenkener holds a B.A. in chemistry from Central College in Pella, Iowa, where he received the Ph.D. in chemistry from the University of Illinois at Urbana-Champaign in 1983. Kolenkener and his wife, Terri, and their two daughters live in Belmont.

Ambassador from Saudi Arabia set to give talk

Prince Turki Al-Faisal, Saudi Arabia’s ambassador to the United States, will present a talk, “Saudi Arabia and the Global Community,” at 4 p.m. on Thursday, Feb. 16, in Bartos Theater.

Turki, 61, has held several national and international leadership and diplomatic roles. A member of the Saudi royal family, he was appointed ambassador to the United States in the 1980s, extradited from Afghanistan to Saudi Arabia in 1989, and served as ambassador to the United Nations from 1992 to 2001. Prince Turki received wide media attention in 1998 when he publicly criticized some aspects of U.S. policy.

Prince Turki speaks frequently on relations between Saudi Arabia and other nations, on terrorism and on developments within Saudi Arabia.

In a major 2005 speech, he described oil as the lifeblood of the world economy and said the kingdom’s commitment to maintaining balance in this market is an intrinsic part of its commitment to fairly playing its part in world affairs.”

SHASS names 31 students as Burchard scholars

Thirty-one sophomores and juniors have been selected as Burchard Scholars in the School of Humanities, Arts and Social Sciences (SHASS) for 2006.

The awards, named after the school’s first dean, John H. Burchard, are given to students who demonstrate unusual abilities and academic excellence in the areas of study associated with the school. According to Kenan Sahin Dean Philip S. Khoury, co-founder of the Burchard Scholars Program, and chair of the selection committee, the students selected in the 20th year of competition for the awards “are from diverse fields and diverse backgrounds and are a remarkable group of gifted young students.”

The Burchard Scholars and a rotating group of faculty will be invited to a series of dinners, beginning this month, at which an MIT faculty member or visiting scholar will present work in progress, followed by a discussion.

This will allow students and faculty members to mix and will give students an opportunity to engage in the kind of intellectual exchange that characterizes scholarship in the humanities, arts, and social sciences.

In addition to Khoury, the selection committee consists of professors Gary I. Segal, Henry Relich, Hedy Rabin, Karl K. Straub, Meryll Kahn, Scott Adelman, and John H. Burchard, the school’s first dean. Those selected include:


Carter to lead Engineering Outreach

Dedric A. Carter has been named the new executive director of the School of Engineering’s Engineering Outreach Program, effective April 1, 2006.

Carter will replace Karl Reid, who became director of the Office of Minority Education and assistant to the chancellor and associate dean for undergraduate education last fall.

Carter was a member of the MIT Corporation from 2000 to 2005 and currently serves on the visiting committees for the Engineering Systems Division and for music and the arts. He also is a member of the board of directors of the MIT Club of Washington, D.C.

Carter, who holds an S.B. and M.Eng. (1999) in electrical engineering and computer science from MIT, has 10 years of experience in business and information technology, said Dean of the School of Engineering Thomas Magnanti, who announced the appointment in late January. Carter participated in the 1993 MITES summer program, which is part of the Engineering Outreach Program. The outreach program also includes the Saturday Science Enrichment and Discovery (SEED) Academy and Science Technology Engineering Math (STEM), a program for Boston middle school students.

“Dedric’s experience in developing educational training programs, his deep understanding of the issues, and his passion for improving K-12 education in the U.S. will be critical as we grow and improve our outreach activities,” Magnanti said.

Magnanti also thanked Birk for his work in the outreach program. “We are grateful that Karl plans to maintain a strong connection to the school and our students, advising, motivating and inspiring us all,” he said.

Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139-4307.

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Professor sizes up competition in new book

Sarah H. Wright
News Office

American companies will find the avenue to success in the global economy both wider and less dependent on cheap labor than they expect, according to a new book based on an MIT study of 500 international companies.


Suzanne Berger, who is the Raphael Dorman and Helen Starbuck Professor of Political Science and director of the MIT International Science and Technology Initiatives (MISTI), is the lead author of “How We Compete.” Berger and the MIT team examined businesses where technology changes rapidly, such as electronics, and more traditional sectors, such as automobiles and textiles. Their global sample of 500 companies and their strategies came from Apple, Cisco, Dell, Lixia Clabaugh, the Gap, Benetton, Sonny and many others; the team visited countries throughout the world.

“We wanted to understand how globalization is changing our society and economy and what we can do about it,” Berger writes. “As for competition through ever-decreasing wages, the team found that to be a competitive-advantage issue, one that ends in “competitive jungles where victories are vanishingly thin,” the book states. “The activities that succeed over time are those that build on continuous learning and innovation.”

Other MIT faculty on the MIT Industrial Performance Research Team include L. Barry Hetherington, professor of electrical engineering and computer science; Rich Wandel, president of the American Israel Public Affairs Committee; and Edward S. Steinfeld, associate professor of political science.

Suzanne Berger

Student leader Velasco earns Mitchell Scholarship

Sasha Brown
News Office

Political science graduate student John Velasco, a well-known campus leader, has become the first MIT student to receive the George J. Mitchell Scholarship, which will provide him with one year of graduate work in Ireland.

Currently enrolled in the five-year S.B. and S.M. program in political science at MIT, Velasco will earn a second master’s degree in international studies at the University of Limerick during the 2006-2007 school year. The Mitchell Scholarship program started in 1998 with an endowment from the Irish government. The award recognizes outstanding young Americans by funding a year of study at universities in Ireland and Northern Ireland. Velasco is one of 12 scholars nationwide to receive the 2006-2007 award.

Velasco’s combination of interests and involvement made him an ideal candidate for the Mitchell award, which seeks to honor those who “exhibit superior records of academic excellence, leadership and public service,” according to the fellowship’s website.

A native of La Mesa, Calif., Velasco’s work ethic was honed over years of chopping, peeling and dipping in his family’s restaurant. “I did a little bit of everything,” said Velasco with a laugh.

The youngest of nine children and the first in his family to finish college, Velasco first learned of MIT through the Chicano Outreach program, the student group that provides telecommunication scholarships to minority students. “I was very interested in science; it was a perfect match,” said third-year electrical engineering and computer science major Velasco.

In Hebrew, the word “Hibur” means connection — an appropriate name for a program designed to create a connection between MIT and the Technion-Israel Institute of Technology in Haifa, Israel. An MIT-Technion Link is an MIT-Hillel-sponsored program started by Hibur: An MIT–Technion Link is an MIT-Hillel-sponsored program started by

John Velasco, who is in the last year of the five-year S.B. and S.M. program in political science at MIT, is the first MIT student chosen to receive the George J. Mitchell Scholarship.

In its first year, 2005, the program grew from two schools with 20 eighth graders to five schools with 80 students. Because of his work with imath, Velasco was one of five students honored nationwide with the Howard Swearer Student Humanitarian Award last year.

He’s a creative thinker, an outstanding communicator and an organized presence in what is often a chaotic business,” said Assistant Dean Sally Susnowitz, director of the Public Service Center.

“John demonstrates the power of combining humanitarianism and practical knowledge with exceptional talents,” Susnowitz said.

Reaching beyond school is what education is all about, said Velasco, who described MIT as a school that “is not just about the academics.” Velasco has been involved in diverse projects. During the 2004 presidential election, he traveled to Cleveland as part of the “Race at Case,” taking part in a national student debate that aired on CNN and C-Span one night before the national vice presidential debate.

In August 2003 Velasco traveled to Scotland for a month to serve as an MIT student representative to the Cambridge-MIT Institute Entrepreneurs Program.

In 2005, he spent two weeks in Haifa, Israel, as part of Hibur, a campus organization that links MIT and Technion-Israel Institute of Technology. Velasco has also served as the campus liaison to the American Israel Public Affairs Committee.

A leader on campus as well, Velasco serves as a student representative to the MIT Task Force on the Educational Community. Among other things, he hopes to encourage more students to focus on study-abroad opportunities, he said.

Velasco also served a term as vice president of the senior class in 2005. He took part in the MIT Leadership conference in 2004 and served as assistant facilitator for the same conference this past year.

Velasco plans to use his time in Ireland to observe the Irish education system firsthand. “I think the Irish do a good job of funding their education,” said Velasco. He said he is looking forward to exploring Ireland and traveling around Europe.

“An incredible opportunity,” Velasco said of the Mitchell scholarship, which provides tuition, room, board and stipends, including one exclusively for travel. “I am really looking forward to it.”

Student-founded Hibur connects MIT with Israeli university

Sasha Brown
News Office

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Kutnicki went to Israel on his own, and explored the Technion campus, is the first MIT student chosen to receive the George J. Mitchell Scholarship.

Together, the two schools explore the differences and similarities in their educational systems. “It was an incredible opportunity,” said Chantel Kutnicki, one of Hibur’s cofounders. Kutnicki was interested in studying at the Technion following his freshman year at MIT. While exploring the possibility, he found that many professors had formed personal relationships with the Technion over the years, but that “there were no institutional frameworks in place,” he said. Kutnicki went to Israel on his own, and during his first visit to the Technion, he met with MIT-Hillel’s Suzanne Berger, the director of the MIT-Harvard Science and Technology Center.

“We see the Technion and MIT as a perfect match,” said third-year electrical engineering and computer science major Chantel Kutnicki, one of Hibur’s cofounders.

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In its first year, 2005, the program attracted 18 MIT students, including both graduate and undergraduate students.

Over the course of the year, students bonded through a weekly program, video conferencing and conference calls and then finally, groups from each university visited the other’s campus. MIT participants were matched with 14 Hibur members. They exchanged weekly e-mails, becoming friends through an exchange of ideas, photos and personal anecdotes.

Sophomore Tala Gershon of materials science and engineering played matchmaker, trying to connect students with exciting and interesting people. “The relationships became more than just professional,” she said.

“Hibur really started as a grassroots effort,” said Kutnicki.

The three secured funding for Hibur’s first year from the Combined Jewish Philanthropy of Boston-Haifa Connection, ATC Chalt Grants of International Hillel, MIT Hillel and student donations.

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Students and faculty used technology to deepen the bond, holding series of video lectures simultaneously in Haifa and Cambridge.

MIT speakers at the lectures included Institute Professors Robert Langer and Joel Moses as well as Frederick Sabucco, a senior lecturer in the Center for Transportation and Logistics and the former Massa- chusetts secretary of transportation, and the now-famous members of the Technion faculty.

During the video conferences, MIT students were able to sit facing a screen showing the Technion students, with the speaker in the middle. He or she spoke to the correspondents via e-mail, “it was very exciting to virtually travel,” said Miriam Rosenblum, Jewish chaplain and director of MIT Hillel. Rosenblum has served as a liaison between the two institutions.

The conferences also afforded students and faculty a chance to participate in cutting-edge research at each other’s schools.

Student professor sizes up competition in new book

L. Barry Hetherington

“How We Compete: What Companies Around the World Are Doing to Make It in Today’s Global Economy,” tells the story of the first time I walked into Lobby 7,” said Velasco, who was one of five students honored nationwide with the Howard Swearer Student Humanitarian Award last year.

“The activities that succeed over time are those that build on continuous learning and innovation,” Berger writes. “As for competition through ever-decreasing wages, the team found that to be a competitive-advantage issue, one that ends in “competitive jungles where victories are vanishingly thin,” the book states. “The activities that succeed over time are those that build on continuous learning and innovation.”

Other MIT faculty on the MIT Industrial Performance Research Team include L. Barry Hetherington, professor of electrical engineering and computer science; Rich Wandel, president of the American Israel Public Affairs Committee; and Edward S. Steinfeld, associate professor of political science.

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“The presentations were fascinating and informative,” said Rosenblum, who
Deep-sea robot photographs ancient Greek shipwreck
Deborah Halber
News Office Correspondent

Sometimes in the fourth century B.C., a Greek merchant ship sank off Chios and the Oinoussai islands in the eastern Aegean Sea. The wooden vessel may have succumbed to a storm or a fire, or maybe rough weather caused the cargo of 400 ceramic jars filled with wine and olive oil to shift without warning. The ship went down 60 meters (about 200 feet) deep, where it remained unnoticed for centuries.

The classical-era ship might never have divulged to archaeologists its clues to another era, except for a research team from MIT, Woods Hole Oceanographic Institution (WHOI), the Greek Ministry of Culture, and the Hellenic Centre for Marine Research (HCMR). They used a novel autonomous underwater vehicle (AUV) to make a high-precision 3-D survey of the site last July. Using techniques perfected by MIT and WHOI researchers over the past eight years, the project was completed in two days what would have taken divers years of effort.

Last week the researchers released a few of the photographs showing detailed images of the remains of the ship's cargo lying on the ocean floor, whose contents date to about 350 B.C. The researchers took more than 7,000 images, which will eventually be combined into one mosaic of the entire wreck site.

The project marks the beginning of a long-term historic expedition by the MIT/WHOI team collaborating with the Greek Ministry of Culture and HCMR.

The Deep Submergence Laboratory of WHOI has for years been a leader in building submersibles and vehicles for a variety of underwater environments, including the Argos vehicle that found the Titanic and the JASON II vehicle that explores the sea floor today. The robotic vehicle used in this project is an AUV called Sealed. WHOI scientist Hamid Hussain and his research team designed and built the AUV that will be used for future imaging of the sea floor.

On Chios, Singh, and his engineering team programmed Sealed to run slow, precise tracelines over the shipwreck site, what is a subsea scan performed by the Greek Ministry of Culture.

The AUV scanned the scattered cargo and created a topographical sonar map while collecting thousands of high-resolution digital images, without ever physically touching the shipwreck. In all, 7,850 images were collected on four dives.

WHOI archaeologists and engineers are assembling those images into mosaics that depict the minute features of the shipwreck with unmatched clarity and detail.

The Chios wreck is playing a critical role in exploring how advanced technology can dramatically change the field of underwater archaeology. The long-term project is the brainchild of expedition co-leaders Brendan Foley and a researcher at WHOI who is a 2003 Ph.D. graduate of MIT’s Program in Science, Technology and Society (STS), and David Mindell, the Dibner Professor of Engineering and the History of Engineering and Manufacturing professor of engineering systems at MIT.

Mindell develops high-precision sonar navigation systems that control underwater robots in very deep water to create the equivalent of fast maps on the ocean floor. Mindell and Foley founded MIT’s DeepArch research group, which is a joint effort of the Center for Information Systems and Management and the Department of Urban Studies and Planning. The projects could be piloted at MIT and applied throughout the

The new research project will last 10 years or more, focusing on uncovering evidence of ancient trade in the Mediterranean, particularly of the Minoan and Mycenaean cultures and their trading partners in the Bronze Age (2500-1200 B.C.).

“This was a home run for us,” Mindell said. “There’s a lot riding on it.” The team will be back in Greece to explore more wreck sites next season.

“This is real research — slow, serious, scientifically rigorous and painstaking work,” Foley said. “It will go in strange directions, produce ambiguous results along the way, and raise a lot of new questions, but we're convinced that in 10 to 15 years, we will change history.”

In addition to Foley, Mindell and Singh, the American team for the Chios expedition included Professor Brian Ringham from the Franklin W. Olin College of Engineering; Richard Camilli, Ryan Eusden and a team led by Professor David C. Switzer from Plymouth State University. The Greek science and technical team was led by HCMR geologist Dimitris Sabellaros. The Greek archaeology team was headed by Katerina Delaporta, director of the Ministry of Culture’s Ephorate of Underwater Antiquities.

Deborah Halber
News Office Correspondent
**BATTERY**

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than batteries to hold the same charge.

The LEES invention would increase the storage capacity of existing commercial ultracapacitors by storing electrical fields at the atomic level. Although ultracapacitors have been around since the 1980s, they are relatively expensive. They have inherent advantages — a 10-year-plus lifetime, indifference to temperature change, high immunity to shock and vibration, and high charging and discharging efficiency — but physical constraints on electrode surface area and spacing have limited ultracapacitors to an energy storage capacity around 25 times less than a similar sized lithium-ion battery.

The LEES ultracapacitor has the capacity to overcome this energy limitation by using vertically aligned single-wall carbon nanotubes in the LEES ultracapacitor to create a regular shape, and a size that is only several atomic diameters in width. The result is a significantly more effective surface area, which equates to significantly increased storage capacity.

"This configuration has the potential to maintain and even improve the high performance characteristics of ultracapacitors while providing energy storage densities comparable to batteries," Schindall said. "Nano-tube-enhanced ultracapacitors would combine the long life and high power characteristics of a commercial ultracapacitor with the higher energy storage density normally available only from a chemical battery."

This work was presented at the 15th International Seminar on Double Layer Capacitors and Hybrid Energy Storage Devices in Deerfield Beach, Fla., in December 2005. The work has been funded in part by the MIT/Industry Consortium on Advanced Automotive Electrical/Electronic Components and Systems and in part by a grant from the Ford-MIT Alliance.

**FISH**

Continued from Page 1

ful information with signals far less intense. This effectively "illuminates" vast areas of the ocean, about a million times larger than what could previously be studied. The images can be updated every minute, offering a chance to continuously monitor the shoals as they change in size and shape over time.

The new technology works best along the continental shelf, so the researchers focused their attention on the waters south of Long Island, New York. When they first used the system, they weren't looking for fish at all — they wanted to see if their device could locate ancient riverbeds under the ocean floor. But when their reconnaissance images did not match the riverbeds, the researchers went back with a new approach, and determined that they were seeing fish — and millions of fish.

This marks the first time scientists have been able to see the patterns formed by large fish populations. Makris found that fish often congregate in an hourglass pattern, also found among other animals, with a thin “bridge” connecting the two ends. The researchers also observed that the same shapes seen in a small fish scale appear on larger scales — tens of meters vs. tens of kilometers — displaying a similar pattern. Population density patterns could be a means of communication, Makris said. His team observed “waves” of population density that spread quickly through a shoal. We think they use this information in the same way that we do — to communicate with each other.

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The research was funded by the Office of Naval Research, the Alfred P. Sloan Foundation, and the National Oceanographic Partnership Program, and is a contribution to the Census of Marine Life.

**Stata Center's in the swim with instructive fish art**

Something fishy has been happening at the Stata Center.

Look up from the Student Street, and you’ll see brightly colored mobiles of fish, birds and turtles spinning in the currents, each mobile carrying a message about water as a globally threatened resource.

Created by members of the MIT community and visitors, under the direction of artist-in-residence Cindy Snodgrass, this temporary installation, “S.O.S.-Fish,” is designed to embody a simple message: “Water unites us. We are the quality of our water,” Snodgrass said.

Some of the messages on the fish include ones about the world, women and children spend hours each day transporting water from its sources to their homes”; “Air is water with holes in it”; and “The largest monster in the world’s water closet is Climate Change.”

Snodgrass, who said she thinks art can be an “engine of community, of discourse and of action,” said she hopes the take-home message from the exhibit will be to “research for yourself about water. What comes out of your faucet is not all you need to be looking at.”

“S.O.S.-Fish,” debuted at MIT during the Alumni Association’s family weekend in October, and the community and passers-by have expanded the exhibit throughout its time at Stata. There have been a number of informal drop-in paint- ing events in Stata’s Taiwan Semiconductor Manufacturing Company Lobby, and a lobby table is set up to invite passers-by to contribute facts and opinions about water for the mobile’s informational “bubbles.”

An Independent Activities Period course, “Assist the Fish — Environmental Art Installation/Mentoring,” was also held in the lobby. Undergraduates in that class mentored children’s groups contributing to the exhibit.

“S.O.S.-Fish” will remain on display until the first week in March.

“The fish make me smile every time I go by them,” said Associate Professor Daniela Bus, who works in Stata. “My little girls, 4 and 6, were really excited. It’s a chance to paint a fish and they brought the safe water message to their respective schools.”

Debra Kedian, who manages the Stata Center space through the Campus Activities Complex, said she has received consistently positive feedback about the fish, with many remarking that the mobiles have given a “real sense of life” to the space. “Cindy’s work is designed to make the more people who know, the greater hope there is for a future of clean water for us all,” Kedian said.

Snodgrass has received support from the National Endowment for the Arts, the Heinz Foundation and the Mid-Atlantic Arts Foundation, among others, and she has a distinguished international career of community environmental art (www.wind-sphere.org). At MIT, her work has been sponsored by the Campus Activities Complex, the Edgerton Center and the Council for the Arts at MIT.

Snodgrass said she hopes to continue to develop the fish-mobiles as “cultural and environmental ambassadors for water.”

Comments about the exhibit and quotes about water may be sent to CindySnodgrass@mit.edu.

This story was reported by Virginia Rich, a graduate student in the Joint Program with the Woods Hole Oceanographic Institute.

Above, freshman Esther Chung of architecture and urban planning works on a fish late last month for the "S.O.S.-Fish" installation at Stata. Below, an artist works on another fish for the installation.
IAP class offers help to campus leaders

Sasha Brown
News Office

When Jordan Fabiansky was elected vice president of the Interfraternity Cen-
cil in late 2004, he found he had a lot to learn. “There was a lot I’d wished I’d known before even being elected,” he said.

He ended up filling a journal with the “practical lessons” he gained as vice presi-
dent, and it grew to be 100 pages long. Eventually, he started to think about ways he — and others like him — might use those lessons.

According to MIT Leadership Center Director Mary Scharff and Associate Direc-
tor Jonathan Lehrich, Fabian-
sky, now a senior, is one of the growth of independent activities. The Independent Activities Period (IAP) course, “Leading and Changing Campus Organiza-
tions,” which was held for the first time this year.

The goal of the three-week course, sponsored by the MIT Leadership Cen-
ter, was to teach students the practical skills they need to lead organizations effectively.

“There are many leadership learning opportunities,” said Lehrich. “But one thing people were really looking for was an opportunity to apply classroom lessons to their current life.”

Offered in six 90-minute sessions, the class drew roughly 25 student leaders from several graduate and undergraduate organizations. The classes focused on the skills that make an individual a leader, as well as ways to recruit and engage future leaders. They talked about marketing ideas and how to mobilize group members to take a personal interest in the organiza-
tion.

The final class discussed how to make a leadership transition — bringing new leaders onboard while maintaining the integ-
rity of the organization.

During the final class, Chris Rezek (S.B. 1999), former board member of the Institute Foundation/Student Resource Service, spoke about why that group folded in 2001. Joost Bonsen (S.B. 1992 and S.M. 2001), a former leader of the 50K for Climate Change organization, “One of the main goals of the IAP (course) was to offer something practic-
tal,” he said.

The class was considered a great suc-
cess and may be offered next year for credit, said Lehrich.

“Hibur is one of a growing number of pro-
duction — that will last a lifetime. “It was one of the most amazing experiences of my life,”
said Gershon.

Hibur continues to evolve. At the end of 2005, Hibur accepted applications from MIT students interested in internships in Israel during the summer of 2006. They are currently matching resumes with compa-

dies. “We are working on several different levels,” said Kutnicki, who hopes that someday Hibur will become an official MIT program.

In September 2005, Chancellor Phillip Clay spoke at a faculty and administrator dinner held for the Technion students. “Hibur is one of the most mind-blowing pro-
\q gams that allows students to get a taste of what it is like to work in an internation-
\nal setting,” he said. “I believe this is an undervalued part of undergraduate educa-
tion at MIT and we should sup-
port for more students.”

Hibur is currently looking for students interested in joining the 2006 delegation.

There will be an information session on Feb. 12 in 2-150/07. For further informa-
tion, visit www.hibur.org or contact MIT Hilter at x3-2982.

Research engineer dies

Paul Warren, a research engineer in the Gas Turbine Lab, died Jan. 26 fol-

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HIBUR

Continued from Page 3

Recalled one small quick: a time delay, which sometimes meant the students on the live side laughed at a joke the other side did not hear for another couple of seconds. “They could tell when something wasn’t quite right,” said Rosen.

Twelve MIT participants made the first campus visit, arriving in Haifa on May 22. In the two weeks they spent in Israel, they toured the Technion, attended classes, visited companies, went on day trips, had dinner in the homes of host families and attended a holiday lunch on the beach before coming back to the States on June 1. “It was an intense schedule,” said Rosen.

When the Israeli students came to Bos-
ton in September, the schedule was simi-
lar. Still, students found the time to form rela-
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VIRUS

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Luria, who came to MIT in 1959, was one of the first scientists to study bac-

teriophages. He was one of the first to bring these bacterial viruses to the fore, and they’ve continued to be important for half a century,” King said.

Bacteriophages were used in crucial experiments to establish the genetic material and determining that translation of genetic material into proteins is based on a triplet code.

Luria’s legacy at MIT’s biology department is carried on today, said King. Shortly after World War II, the Institute got one of the first electron microscopes in the United States, and Luria molded the direction of the depart-
ment, said King, who arrived at MIT in 1959 after working with Delbruck at Caltech.

“It was (Luria’s) appointment that led to the invention of what is now called a phage)

The students’ proposals would pro-
tect them for possible use in the wider community. Wind turbines that perch on the edge of a road would be a good use in operating the Gummi Bear catapult he built during an IAP Interactive Toy Design class taught by Hayes Raffte. PHOTO / DONNA COVENY

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Assistant Professor Brian Robison will perform several pieces on the theremin on Feb. 14, Valentine’s Day.

**Concert features hands-off music**

Lynn Heinemann
Office of the Arts

Forget the roses and violins. In a special noontime concert on Valentine’s Day called “Waves of Pleasure,” Assistant Professor Brian Robison will wave his hands over a theremin to create other-worldly renditions of popular romantic classics by Handel, Puccini and Rachmaninoff, as well as contemporary favorites by Ellington, Gershwin and Rodgers.

Also featuring lecturer Charles Shadle as piano accompanist, the concert will be held in the Lewis Music Library (Room 14E-100) on Tuesday, Feb. 14 from 12 to 1 p.m.

One of the earliest electronic musical instruments, the theremin is unique in that the performer doesn’t touch it while playing. Instead, proximity of the performer’s hands to two antennae controls the pitch and volume.

Robison first encountered a theremin in a music store about a decade ago. “I was hopelessly unable to produce any recognizably musical sound,” he recalls, but he decided last fall that the instrument was just too much fun not to have one.

Calling the theremin “maddeningly difficult to play accurately,” Robison notes that it requires extremely fine motor control. “If your hand drifts just a millimeter or two in space, that motion produces a noticeable change in pitch,” he says.

The concert will include an opportunity for adventurous audience members to try the instrument.

There’s something mesmerizing about playing an instrument that responds to your every move, whether you want it to or not,” Robison says. “I keep coming back to the theremin — despite the limitations, despite the frustration, the humiliation. Much love.”

‘America Starts Here’ — at List Visual Arts Center

Lauren Maurand
Office of the Arts

The List Visual Arts Center this week opens “America Starts Here: Kate Ericson and Mel Ziegler,” a celebration of the decade-long collaboration between two artists who devoted the body of their work to looking at America through the objects and materials it produces. The show opens with a reception tomorrow, Feb. 9, from 5:30 to 7:30 p.m. and an artist’s talk with Ziegler on Friday, Feb. 10, at 5:30 p.m.

Ericson and Ziegler worked together from the mid-1980s to the mid-90s, producing mostly installations and outdoor projects. Their work combines time periods and concepts in pieces such as “Camouflaged History,” and installations from their collaboration, as well as writings from many of the original curators of their shows.

The 20-piece show will be on view in the LVAC gallery through April 9.

They used humble materials like paint or glass jars to approach lofty ideas. “They always created works that added resources to the community rather than depleting them,” wrote Arning in a recent e-mail.

Arning worked with Ericson and Ziegler early on in both his career and their collaboration, and he was impressed with their work — impressed enough to bring it to MIT.

After Ericson’s death from cancer in 1995 at the age of 39, there was less promotion of the artists’ work. Arning hopes that “America Starts Here” will help reinvigorate interest in these two important American artists.

The show is jointly curated by Arning and Ian Berry of the Austin Museum of Art in Texas; Artspace at the Kansas City Art Institute; and the Contemporary Art Center in Cincinnati.

In conjunction with the show, MIT Press has published a comprehensive 216-page catalog of Ericson and Ziegler’s work, filled with images of the products and installations from their collaboration, as well as writings from many of the original curators of their shows.

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**Visiting artist**

Hafler directs ‘The Old Law’

Lynn Heinemann
Office of the Arts

In a room postered with fliers proclaiming, “The old must die,” Max Hafler is the only one with gray hair. Directing a cast of MIT students in a rehearsal for Drasham’s production of “The Old Law,” a play in which the generation gap is taken to extremes, Hafler alternately bounds onto the stage of Kresge Little Theater, slouches in a front-row seat, or ranges up and down the aisle.

Set in a society that legislates that men over 80 and women over 60 are useless and must be put to death, “The Old Law” has “powerful resonances for now,” says Hafler, a visiting artist at MIT.

As soon as the law goes into effect, young rich people gleefully send their parents to be executed. Young wives, hungry for freedom and inheritances, wait impatiently for their old husbands to be put to death. The world goes mad.

Hafler lists the play’s themes as “the rule of law, the nature of evil, euthanasia and the value of youth and age.”

Proving that today’s youth has no respect for age over his own age and experience, Hafler jumps onto the stage to instruct his young actors. He staggers across the stage to illustrate how rollicking and rowdy a drunk can be, and intones, bellows, blears and barks a single line to display the vocal cords that emphases a character could show.

In other cases, he tunes down the theatricals. “Try not to use your face so much,” he advises senior Helen McCreary, who plays the heroic Hippolyta in Hafler’s tragi-comic adaptation of the 17th century play by Thomas Middleton and William Rowley. “You’ve got a great face and you use it a lot. Try to be still, to internalize.”

Hafler says he likes to use people to their limit and not just as the role they are assigned to play. Most of the actors have several parts, including statues, old people, hunting dogs, lawyers — even abstract entities in a character’s mind.

“Max is more into direction and group work than any director I’ve had,” says freshman Ashley Nichols, who’s making her Dramashop debut. Because so many of the character representations are style and not abstract, Nichols says, the non-speaking ensemble parts require as much work as the parts with lines, so the audience will be able to understand what’s happening.

“I am very excited by group work and ensemble physical playing,” Hafler says. Encouraging his actors to loosen up, he insists that their characterizations be big, even as they internalize the underlying emotions, “I want you to feel brave enough to really take your character through the journey in this play,” he tells his cast. “Even if it’s not naturalistic.” Then, with proprietary pride, he adds, “There are journeys because I put them there.”

Hafler first adapted the play for a production at the Lyric Hammersmith in London, earning praise from Irving Wardle for The (London) Independent, who wrote, “The piece connects across time and with a powerful jolt of moral electricity.”

Hafler has died in County Galway, Ireland, for more than seven years. He has worked as a director with Galway Youth Theatre and teaches in the theater A. program at the National University of Ireland, Galway.

Earlier this year Hafler completed a short residency at MIT, working in ensemble and directing, giving a lecture on Marlowe and doing voice work in Shakespeare class.

“The Old Law” runs Thursday through Saturday, Feb. 9-11 and Feb. 16-18 at 8 p.m. in Kresge Little Theater.

Tickets are $8, $6 for students. For more information, call 625-2008 or visit web.mit.edu/dramashop/www.

Science fiction writer Cory Doctorow will be on campus Monday, Feb. 13, for a lecture and book signing, “To Your Scion! Out at MIT: An Evening With Cory Doctorow,” starting at 5 p.m. in Bartos Theater, followed by a reception.

A blogger for the web site BoingBoing.net and Europe’s cyber rights campaigner for the Electronic Frontier Foundation (EFF), Doctorow develops his own books from notes and ideas posted on his website, BoingBoing.net. His books — or “e-books” — available for free downloads by readers through Creative Commons licenses, now operating in 81 countries.

While at MIT, Doctorow will meet with students in formal and informal settings. He’ll also be guest of honor at Boskone, the Boston science fiction convention, to be held Feb. 17-19.
Cars and stars

Andy Zimmermann is shown here with his multimedia installation, “Cars and Stars,” at the MIT Museum. The installation projects digital animation and video onto a three-dimensional sculpture, accompanying with accomplishing digital sound composition.

Go Online! For complete events listings, see the MIT Events Calendar at: http://events.mit.edu.