A social revolution in the evolving barcode?

By Diana Yates
Life Sciences Editor

What if you could trace the history of everything you buy back to its origins? Using your smart phone camera, you could learn what factory made the ingredients in your heart medication, what country grew the corn in your breakfast cereal, or even how to recycle the phone. You could follow the whole life cycle of a product and everyone who handled it along the way to ensure that the medicine you’re taking isn’t counterfeit and the food you’re eating is safe.

This reality is on the horizon, said UI food science and human nutrition professor Scott Morris, an expert on the history and evolution of packaging and the author of “Food and Package Engineering,” a new textbook published by Wiley Blackwell. Barcodes, the familiar black-and-white labels on packages that began as a means to scan prices or track inventory, are evolving into a broader class of identifiers in new and startling ways, said Morris, who also is a professor of agricultural and biological engineering. As the technology advances, these electronic identifiers allow access to more information about the contents.

SEE BARCODE. PAGE 10

Ionic liquid catalyst helps turn emissions into fuel

By Liz Ahlberg
Physical Sciences Editor

An Illinois research team has succeeded in overcoming one major obstacle to a promising technology that simultaneously reduces atmospheric carbon dioxide and produces fuel.

UI chemical and biological engineering professor Paul Kenis and his research group joined forces with researchers at Dioxide Materials, a startup company, to produce a catalyst that improves artificial photosynthesis.

The company, in the university Research Park, was founded by retired chemical engineering professor Richard Masel. The team reported their results in the journal Science.

Artificial photosynthesis is the process of converting carbon dioxide gas into useful carbon-based chemicals, most notably fuel or other compounds usually derived from petroleum, an alternative to extracting them from biomass.

Producing fuel. Biofuel production, left, compared to fuel produced through artificial synthesis. Crops take in CO₂, water and sunlight to produce biomass, which then is transferred to a refinery to create fuel. In the artificial photosynthesis route, a solar collector or windmill collects energy that powers an electrolyzer, which converts CO₂ to a synthesis gas that is piped to a refinery to create fuel.

In plants, photosynthesis uses solar energy to convert carbon dioxide (CO₂) and water to sugars and other hydrocarbons. Biofuels are refined from sugars extracted from crops such as corn. However, in artificial photosynthesis, an electrochemical cell uses energy from a solar collector or a wind turbine to convert CO₂ to simple carbon fuels such as formic acid or methanol, which are further refined to make ethanol and other fuels.

“The key advantage is that there is no competition with the food supply,” said Masel, a co-principal investigator of the paper and CEO of Dioxide Materials, “and it is a lot cheaper to transmit electricity than it is to ship biomass to a refinery.”

However, one big hurdle has kept artificial photosynthesis from vaulting into the mainstream. The first step to making fuel, turning carbon dioxide into carbon monoxide, is too energy intensive. It requires so much electricity to drive this first reaction that more energy is used to produce the fuel than can be stored in the fuel.

The Illinois group used a novel approach involving an ionic liquid to catalyze the reaction, greatly reducing the energy required to drive the process. The ionic liquids stabilize the in-situ fuel.

Fall foliage

Brightly colored trees frame the Beckman Institute for Advanced Science and Technology during what has been an unusually dry and warm start to October. On average, the Midwest experienced only 28 percent of its normal precipitation during the first 12 days of October, and temperatures were an average of 6 degrees above normal, according to Steve Hilberg at the Midwestern Regional Climate Center at the Illinois State Water Survey.

According to Hilberg, the onset and intensity of fall colors are dependent on both temperature and precipitation. Dry weather, such as what the Midwest experienced this summer and early fall, can delay the onset of fall color. “The cool weather in September may have the effect of speeding up colors, but the warm, sunny days and cool nights we had in early October were favorable for color development,” Hilberg said. According to EnjoyIllinois.com, updated by the Illinois Department of Natural Resources, peak season is still a few weeks off in Central Illinois.

Fall foliage. Photo by Steve Hilberg on October 11.

Promising technology

Chemical and biological engineering professor and chair Paul Kenis and his group teamed with researchers at startup company Dioxide Materials to develop a catalyst that dramatically reduces the energy requirements of artificial photosynthesis.

SEE FUEL. PAGE 5

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ON THE WEB www.news.illinois.edu/ii
Senate committee to review enrollment management policy

By Mike Helenthal
Assistant Editor

The Senate Executive Committee lead-
ers Monday kept the door open for the Urbana Academic Sen-
ate to directly offer advice to UI President Michael J. Hogan and the UI Board of Trustees on a proposed approach to university enrollment management.

The SEC approved the formation of an ad hoc committee comprising the leaders of five senate subcommittees and two faculty members, who will study the implications for a new enrollment management strategy and may offer input to the president and board.

The recommendations were included in a review of the university’s enrollment management, commissioned by Hogan last winter following a decision by the UI Board of Trustees to approve the appointment of a new university-wide executive director of enrollment planning and management. The president commissioned the review as a prelude to beginning a search for a director.

The review and recommendations of that time can’t fully comprehend the progress we’ve made because they don’t know the background,” said Robert Hays, a UI professor emeritus of journalism whose fourth novel, “Blood on the Roses,” offers an unvarnished view of the malevo-

The novel tells of the story of Rachel Fei-
gen, a reporter sent to Tennessee on a miss-
ing person story. She gets caught up in the big story that is observed as an out-

With his expectations to observe as an out-

Hays is a member of a number of books, both fiction and nonfiction, including “G.

the board of trustees with recommendations

The SEC approved the formation of the ad hoc committee in concern over the matter will go before SEC Chairman Matt Wheeler and Keith Marshall, associ-

Shillingford said the need for urgency in

He would have implemented this yes-

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His three earlier novels, also managed by Vanilla Heart, are “The Life and Death of Lizzie Morris,” which was nominated for the 2009 Pulitzer Prize literary award; “Circles in the Water”; and “The Baby Riv-

All clan captions should be submitted to the editor or to the website by Oct. 20, 2011.

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http://news.illinois.edu/ii
Nick Holonyak, Jr., a renowned innovator of semiconductor devices, has joined the elite ranks of scientists and inventors inducted into the Engineering and Science Hall of Fame.

Holonyak is recognized for his invention of the first practical light-emitting diode (LED). He will be inducted at a ceremony in Dayton, Ohio, on Nov. 3, along with Nikola Tesla and James Tsui. The 2011 inductees join more than 50 great names in the history of science, including Thomas Edison, Enrico Fermi, Jonas Salk and the Wright Brothers.

Holonyak, the John Bardeen Professor of Electrical and Computer Engineering and Physics at the UI, is in a pioneer in the field of optoelectronics—devices that convert electricity into light or vice-versa. He gained eminence through his numerous inventions and contributions to advances in semiconductor materials and devices. His work has resulted in more than 500 academic papers and 51 patents. LEDs, semiconductor crystal devices that emit light when electrified, now are commonly used on items ranging from in-street nameplates to household dimmer switches. In a different form, LEDs can function as lasers. His innovation also has contributed to the functionality of both a transistor and a laser by converting electrical input signals into two output signals, one electrical and one optical. This technology dramatically improves the speed and availability of electronic communications and computers.

Holonyak, Bardeen’s first student, earned his bachelor’s, master’s and doctoral degrees at the UI. He then worked for Bell Labs, the U.S. Army Signal Corps, and General Electric before joining the faculty at Illinois in 1963. Among his numerous awards are the Lemelson-MIT Prize (2004), the Global Energy Prize from Russia (2003), the U.S. National Medal of Technology (2002), the Japan Prize (1995), the National Academy of Sciences’ Award for the Industrial Application of Science (1993), and the U.S. National Medal of Science (1990). He is a member of the National Academy of Engineering, the National Academy of Sciences, and the National Inventors’ Hall of Fame; as well as a fellow of the American Academy of Arts and Sciences, the Institute of Electrical and Electronic Engineers, the American Physical Society, and the Optical Society of America. He is a foreign member of the Russian Academy of Sciences.

Holonyak has worked with UI Electrical and Computer Engineering professor Milton Feng to demonstrate the operation of a transistor laser that combines the functionality of both a transistor and a laser by converting electrical input signals into two output signals, one electrical and one optical. This technology dramatically improves the speed and availability of electronic communications and computers.

Honor a pioneer
Nick Holonyak Jr., the Bardeen Professor of Electrical and Computer Engineering and Physics, will be inducted into the Engineering and Science Hall of Fame for his development of the first practical light-emitting diode (LED). His innovations are noted on one of the campus historical markers.

Fame is an international organization dedicated to honoring national and international achievements in science and engineering and to preserving the legacy of those whose contributions have shaped history and improved quality of life.
UI Police Department not getting older, just better

By Mike Helenthal
Assistant Editor

The history of the UI Police Department is in fact two distinct stories covering more than 100 years. The first story starts in 1895 – less than 30 years after the university was chartered – when UI President Andrew Draper decreed campus crime had spiraled out of control.

“Lawlessness is prevalent about university property to a degree which I never saw before, elsewhere, about public property,” he was quoted as telling the UI Board of Trustees just prior to the turn of the century. “The people of the vicinage maraud (sic) upon our grounds and are impertinent when their depredations are resisted.”

Draper’s solution was to have the janitors of campus buildings take on “night watchmen” duties, a decision that eventually would lead to the second part of the story – the formation of a modern-day, professionally staffed police department.

“It’s been really interesting to find out how much has changed and how much is the same,” said Christopher Hawk, an officer for 15 years. He is researching the department’s history in anticipation of this year’s anniversary.

“It puts today into context,” he said. Hawk was part of the committee that planned the anniversary celebration last month at the Public Safety Building. He researched the department’s history through various sources, from university archives to a master’s thesis written by Kris Fitzpatrick, a former UI police chief and retired head of the Police Training Institute.

“The anniversary kind of snuck up on us,” he said. “We talked about what we wanted to do, and one of those things was to tell the story of how the department came about.”

Officers also will receive a centennial badge that they’ll wear on uniforms through next year, and there was to have the janitors of campus buildings take on “night watchmen” duties, a decision that eventually would lead to the second part of the story – the formation of a modern-day, professionally staffed police department.

“History is important to us to recognize and learn where we have come from,” he said. “It’s a way to honor those who have previously undertaken the challenging mission of serving and protecting our university during many campus historical points.”

1911 is considered the official birth-year of the police department, when UI trustees voted to ”employ two deputy sheriffs for continuous police duty, day and night, on and about the university campus.”

Campus officers were limited in their duties, which mostly encompassed minor infractions and campus property protection – but they also took those duties seriously.

Leading the way was Urbana’s Pearl “Pete” Adams – affectionately called “Officer Pete” by modern-day officers – who started as a “special” police officer in 1899 and eventually became chief after the department’s formation.

“There is quite a bit of documentation on him even though he predated the department by a few years,” Hawk said. “He spent a good part of his day keeping people from walking on the grass and catching students smoking on campus. A lot of their focus back then was just rattling door handles and fire and flood watch.”

One article Hawk found, written in 1926, describes the day Adams “detained 21 students and staff for smoking.” (Students breaking the rules were taken to the Dean of Men’s Office, though the punishment for staff members wasn’t clear.)

According to the historical documents gathered by Hawk, theft and the specifically undefined crime of “vice” continued to be of concern to UI trustees through the 1960s – though some of the jurisdictional issues were becoming trickier with the growth of the university and its twin-city neighbors.

Some of those issues were solved through a state statute enacted in 1964 giving campus police officers the same powers and duties – “to make arrest on view or warrants of violations” – as other police units.

By 1970 the university had begun merging the police department and Security Office, where formal investigations had up to that point been conducted.

“That’s when the department became a full-service organization,” Hawk said.

Former UI police officer Bruce Dixon was there to witness the turning of the department’s second historical chapter. Hired out of the Air Force in 1968, Dixon said there was a lot of resistance from a group of officers who were originally hired as glorified night watchmen – then asked to become policemen.

“We only had three patrol cars back then, so there were still a lot of walking zones,” he recalled of his first years with the department. “We walked around a lot and checked the buildings. We had big key chains we carried around and on Sundays we actually had to lock all of the buildings up. We didn’t have radios so we had to call and check in every half-hour.”

Dixon said he already was considering changing jobs because he was dissatisfied. See POLICE, Page 5.
POLICE, CONTINUED FROM PAGE 4

with the light duties, but then the depart-
men-tal change started occurring.

“I was an Air Force policeman for more
than seven years and when I was young I
always wanted to be a cop,” he said. “I felt
like a security guard, not a police officer.”
He said the change in state statute and
growing social unrest of the 1960s were
major factors leading to a more professional
police department. He said one of the pro-
tests in 1969 led to the takeover of the Elec-
trical Engineering Building and the pres-
ence of the National Guard to restore peace.

“It was a little nerve-wracking because
it happened right after Kent State,” he said,
re-ferring to the incident at the Ohio univer-
sity where student protesters were shot and
killed. “We had to take back the building.”

But the incident was the turning point for
some unenthusiastic officers, who were just
fine rattling doorknobs.

“After the riots, we lost a lot of officers,”
he said. “They figured that was the future
and they didn’t want to go through that
again. To go from stopping a panzy raid to
having people throwing rocks at you was a
big change.

“And there were a lot of changes about
them; the training was improving, they were
hiring a lot of officers and we were getting
more squad cars. It changed tremendously
in just my first 10 years.”

Dixon ended up taking on additional,
dangerous duties, signing up with the bomb
squad and serving there for the next 22
years until his retirement in 1999.

“It took a lot of years and a lot of work,
but we got there,” he said of the depart-
ment’s progression.

Hawk said today’s department has come
full circle in many ways.

Although officers have access to better
training and tools and are even members
of the regional emergency response team,
he said leaders still understand the value
of boots on the street. The department cur-
rently encourages officers to get out of their
vehicles and make contact with the pub-
lc, which leads to good relationships that
translate into better reporting of crimes.

“We’ve involved at every level of law
enforcement now, but I still have a lot of fo-
cus on getting out and getting in the build-
gings,” he said. “There are a lot of benefits to
being out there and about.”

Officer Pete likely would agree.

UI Police Department seeks accreditation

By Mike Helenthal
Assistant Editor

A fter a full century of existence, the UI Police Department is old-
er and wiser – but not ready to settle down anytime soon.

Department leaders are working to fi-
nalize state accreditation requirements by
the end of the year in hopes of full certifi-
cation in 2012.

“It’s something we’ve been working on
for the past year and a half,” said Lt. Tony
Brown, who has led the department’s pro-
cess. “Our goal right now is to finalize ev-
erything on our end and then have them
come in and evaluate us.”

Brown said the department has re-
viewed all of its policies, changing many
of them to meet state and national stan-
dards and adding new ones where needed.
The next step is to document the changes
in “proof” documents that will be pro-
vided to the Illinois Law Enforcement Ac-
creditation Program.

“There’s a lot more that goes into this
than you might think,” Brown said. “I
worked on it full-time for a year and we’re
still trying to wrap it up.”

There are more than 170 ILEAP stan-
dards that must be upheld, each carrying a
sub-list of standards to be met.

Brown said the accreditation process
was initiated for a number of reasons, one
of them being that “it shows a certain level
of professionalism.”

But adapting to wider-ranging specifi-
cations has benefits, including added prote-
sion against lawsuits.

“There is an expectation of a reduced
number of lawsuits because you’ve al-
ready proven you’re complying with state
and national standards,” he said.

Once the department is accredited it
must submit annual reports to remain
compliant. ILEAP officials also make reg-
ular visits every few years to ensure com-
plicity and to keep police departments
updated on changes in the law.

Brown said the review of departmental
policy hasn’t led to a major overhaul, but
has pointed out areas of improvement.

“There are things that we are already
doing or have been doing automatically
for years,” Brown said, “but we didn’t
necessarily have a policy written for it.
We had to ask, ‘Do we have all the specifics
outlined for this?’”

POLICE, CONTINUED FROM PAGE 1

FUEL. CONTINUED FROM PAGE 3

Terms of the reaction so that less
electricity is needed to complete the
conversion.

The researchers used an electro-
chemical cell as a flow reactor, sepa-
rating the gaseous CO2 output from the liquid electrolyte
catalyst with gas-diffusion electrodes. The cell design allowed the research-
ers to fine-tune the composition of the electrolyte stream to improve reaction
kinetics, including adding ionic liq-
uids as a co-catalyst.

“It lowers the overpotential for
CO2 reduction tremendously,” said Kenis,
who is also a professor of me-
chanical science and engineering
and affiliated with the Beckman
Institute
for Advanced Science and Technol-
yogy. “Therefore, a much lower po-
tential has to be applied. Applying a
much lower potential corresponds to
reducing less energy to drive the
process.”

Next, the researchers hope to
tackle the problem of throughput.
To make their technology useful for
commercial applications, they need to
speed up the reaction and maximize
conversion.

“More work is needed, but this
research brings us a significant step
closer to reducing our dependence on
fossil fuels while simultaneously re-
ducing CO2 emissions that are linked to
unwanted climate change,” Kenis
said.

Graduate students Brian Rosen,
Michael Thorson, Wei Zhu and Devin
Whipple and postdoctoral researcher
Amin Salehi-Khojin were co-authors
of the paper. The U.S. Department of
Energy supported this work. 
Johnny Watts was a signals analyst in military intelligence in the Army. Elizabeth Ambros, a Navy corpsman, managed the medical care for 300 Marines. Andrew Kennedy led an Army scout platoon in urban combat.

All three were deployed at least once to Iraq.

Now they're among the more than 350 identified student veterans on the UI campus. About 70 percent are undergraduates, the rest graduate students.

It's a number likely to grow in coming years with the drawdown of troops in Iraq and Afghanistan and with the improved educational benefits now available.

The Post-9/11 GI Bill took effect two years ago and the state-funded Illinois Veterans Grant program.

The 9/11 GI Bill took effect two years ago and the state-funded Illinois Veterans Grant program. About 70 percent are undergraduates, with the rest graduate students.

Student veterans’ age, experience add dimension to campus
By Craig Chamberlain
News Editor

For the undergraduate veterans, how do they fare in college? Without close classmates? Without being the oldest? How do they relate to life on campus without the service came while many current undergraduates were still in middle school and high school. Their jobs in the service may have involved significant responsibility, if not significant danger. Some may have seen the worst of war.

“They’re coming in with a life experience that is pretty unique,” said Nick Osborne, a Coast Guard veteran, who last January became the first coordinator of Veteran Student Support Services within the Office of the Dean of Students.

At the same time, they don’t want to be defined by it. Osborne said. “It’s just one of the things that makes them better, more-goal-oriented students, and one that’s harder to find on a campus where most can’t relate to your experience,” he said.

Student veterans Nick Osborne, a Coast Guard veteran, became the first coordinator of Veteran Student Support Services within the Office of the Dean of Students last January. Osborne says the veterans bring a “pretty unique life experience” to campus, but they don’t want to be defined by it.

Watts, a 26-year-old married sophomore in electrical engineering from Madison, Ill., put it concisely when he said “we were there before.” They do things he used to do, but which he’s “really not interested in doing anymore,” he said.

Most veterans did their share of “ goofing off” during off-hours in the military, said Ambros, a 25-year-old sophomore pre-med kinesiology student from Puerto Rico and Chicago. “We’re already past that,” she said. “Now we’re here to get something done.”

The veterans’ age and experience not only can set them apart, but also make some of them better, more-goal-oriented students, Osborne said.

Watts said he credits the military for giving him the discipline to sit and study even on a sunny Saturday in the Illini Union, when other students were out playing on the Quad. Ambros said her experience as a corpsman gave her confidence in skills she knows she will need as a doctor.

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That doesn’t mean the student veterans don’t face challenges – from feeling academically rusty after years out of the classroom, to difficulties managing finances, to knowing what resources. Now he’s the president.

“We share similar experiences, we relate to each other, just that camaraderie that we miss from being in the military,” said Kennedy, a West Point graduate who spent more than five years in the Army before returning to school.

Many of their activities are social, just hanging out, he said. There’s a weekly Thursday evening meet-up at a Campus-town bar, which usually draws about 30, and other get-togethers for watching football, and teams organized for intramural soccer, football and darts.

In the spring, they organized a drive to send care packages to troops overseas, and in the fall helped Osborne organize a campaign.
Many times those problems can be mundane, Osborne said. Difficulties in getting benefits or, for those still in the Reserves or National Guard, getting flexibility on classroom assignments in order to attend a unit training exercise.

But there also are wounded veterans who need accommodations for physical disabilities, or help in dealing with the Veterans Administration, he said. And there are veterans dealing with post-traumatic stress disorder, who may need counseling or other kinds of help.

PTSD, however, can be a sore subject among many student veterans, Osborne said. Many of those he works with have complained that too often when military service comes up in class or general discussion, it’s through the subject of PTSD.

“If you only look at it through that lens, I think that it’s important that PTSD is taken as one piece, but not the center piece,” Osborne said. Later, however, most students and community groups have found “it’s been quite the opposite – they have found it very helpful.”

Osborne presents the list as part of a presentation he has given about two dozen times to faculty and staff members and community groups. He sees it as part of his role as a bridge between the student veterans and the campus.

Topping the list, perhaps, is “Did you kill anyone?” Watts said the question doesn’t even usually come up among veterans.

Osborne presents the list as part of a presentation he has given about two dozen times to faculty and staff members and community groups. He sees it as part of his role as a bridge between the student veterans and the campus.

But he also holds a master’s in social welfare, in which he specialized in the study of college-age men and masculinity, as well as a doctorate in higher education administration. He also worked for the Veterans Administration while in school. His education and experience lend themselves to counseling, advising and mentoring, which are all part of the position, he said.

As for his broader role as an assistant dean of students, Osborne compares the activity and energy to what he found in the military. “It’s just constantly like being on active duty,” he said. “Every moment of every day, when the phone rings, when a student comes in, you just don’t know what you’ll be dealing with.”

The Illinois Green Business Association has certified Intermezzo café, at Krannert Center for the Performing Arts, as a green business under the association’s green business certification program.

Intermezzo, which benefits the center’s extensive artistic programming, has adopted greener practices to demonstrate a commitment to a cleaner and healthier environment.

Intermezzo purchases organic, shade-grown, fair-trade coffee, as well as organic foods. It also stocks biodegradable to-go containers for customers. The café only gives napkins, condiments and utensils for to-go orders upon request. It recycles cans, plastic and glass; posters near the kitchen sink encourage employees’ wise water use.

Green business certification validates a business’s conscious efforts with a transparent and thorough verification process.

The Illinois Green Business Association is based in Urbana, a 501(c)(3) nonprofit organization that helps businesses realize environmental and economic benefits of green business practices.
Physicists localize 3-D matter waves for first time

By Liz Ahlberg
Physical Sciences Editor

U
I physicists have experimentally demonstrated for the first time how three-dimensional conduction is affected by the defects that plague materials. Understanding these effects is important for many electronics applications.

Led by physics professor Brian DeMarco, the researchers achieved complete localization of quantum matter waves in three dimensions, first theorized roughly half a century ago. The group published its findings in the Oct. 7 issue of the journal Science.

Defects in materials are inevitable, but their effects are poorly understood. Understanding how disorder in a material affects waves traveling through it has implications for many applications, including ultrasonic waves in medical imaging, lasers for imaging and sensing, and electron waves for electronics and superconductors.

“The physics behind disorder is fundamental to understanding the impact of unavoidable material imperfections on these kinds of applications,” DeMarco said. Scientists have long theorized, but never observed, that strong disorder causing interference on all sides can trap a matter wave in one place, a phenomenon known as Anderson localization. According to DeMarco, this is analogous to a trumpeter playing in a concert hall filled with randomly placed barriers that reflect sound waves. Instead of traveling in all directions, the sound stays at its source, never propagating outward because of destructive interference.

“The result? Perfect silence everywhere in the concert hall. The trumpeter blows into his instrument, but the sound never leaves the trumpet,” DeMarco said. “That’s exactly the case in our experiment, although we use quantum matter waves instead of sound, and the barriers are created using a speckled green laser beam.”

To simulate electrons moving in waves through a metal, DeMarco’s group uses ultra-cold atoms moving as matter waves in a disordered laser beam. Using laser light as an analogy for a material allows the researchers to completely characterize and control the disorder – a feat impossible in solids, which has made understanding and testing theories of Anderson localization difficult.

The researchers demonstrated that the laser light could completely localize the atoms – the first direct observation of three-dimensional Anderson localization of matter.

“This means that we can study Anderson localization in a way that is relevant to materials,” DeMarco said. “Now, theories of Anderson localization in 3-D can be compared to our ‘material’ and tested for the first time.”

The team also measured the energy a particle needs to escape localization, known as the mobility edge. Waves with energy higher than the mobility edge are free to propagate throughout the disorder, but waves with energy lower than the mobility edge are completely localized – even when there is a path through the barriers.

By tuning the power of the speckled green laser beam, the researchers measured the relationship between the mobility edge and disorder strength. They found that as disorder increased, so did the mobility edge, meaning that materials with high concentrations of defects induce more localization.

DeMarco hopes to use the quantum-matter analogues to better understand and manipulate materials.

Eventually, he plans to use his measurements of Anderson localization and the mobility edge along with future work exploring other parameters to engineer materials to better perform specific applications – in particular, high-temperature superconductors.

“Comparing measurements on a solid to theory are complicated by our lack of knowledge of the disorder in the solid and our inability to remove it,” DeMarco said. “But, that’s exactly what we can do with our experiment, and what makes it so powerful and exciting.”

The Defense Advanced Research Projects Agency, the Office of Naval Research and the National Science Foundation supported this work.

Anderson localization
Physics professor Brian DeMarco, center, and graduate students Stanimir Kondov, left, and William McGehee were the first to trap waves of quantum matter in three dimensions.

Ad removed for online version
Policy must balance private property, public good

By Phil Ciciora
Business and Law Editor

The lack of a settled legal framework that balances private property rights while maximizing the public good ultimately hinders the large-scale commercial deployment of geologic carbon sequestration, according to research by a UI expert in renewable energy law.

In order to justify the extensive up-front capital investment by firms, issues with the property rights of the subsurface pore space that would permanently house the captured carbon dioxide must be resolved first, says A. Bryan Endres, a professor of agricultural law.

“You have a new technology that requires a lot of upfront capital investment, but you don’t have a legal framework for how you’re going to be able to implement this technology with regard to property rights,” said Endres, who also is the director of the university’s European Union Center.

“What’s unique about property rights is they’re usually pretty well settled, and yet here we are dealing with a situation where ownership isn’t quite so clear. That’s a key question, because a firm isn’t going to invest money in a carbon sequestration plant before they are confident about who owns the area underneath.”

According to the study, published in the UI Law Review, ownership of the pore space at the depths necessary for permanent geologic carbon sequestration is still an open question in the vast majority of states.

“Right now, only Wyoming, Montana and North Dakota have a property rights of the pore space to the surface property owner,” Endres said. “While that might make good political sense, I don’t think that makes good policy sense because it creates a patchwork of small land-holdings. With carbon sequestration, the geology is going to determine the limits, not some grid-based property system. This is why we need to have legislative involvement to clarify the situation.”

Endres says sequestration operations implicate a unique set of property rights issues, one that’s analogous to a plane flying over a house at 30,000 feet.

“Do you own the airspace above your house?” he said. “Well, no, and the reason we know the answer to that question is that there was a court case that settled the issue. And that was one of the things that allowed the airline industry to develop, so that planes didn’t have to weave around an easement, like railroads do. Similarly, picture a really deep hole that may start on your land but goes down 7,000 feet. Who owns that? One argument is that a property owner does not have a reasonable expectation of ever using the pore space at such extreme depths.”

Like air transport, carbon sequestration should be thought of as a public good – one that has the added potential to reduce carbon dioxide emissions and curb global climate change.

“It makes more sense to treat it as you would airspace for an airplane, in that it belongs to the state and they can decide who’s going to access it,” Endres said. “It would be a much more efficient system if the state had ownership of it.”

Endres notes that there’s also the potential for states to generate a significant amount of money from carbon sequestration, either through an auction or a royalty system.

Because of its unique geology, the Mount Simon formation, which makes up a large swath of the Illinois Basin that extends to parts of Illinois, Indiana and Kentucky, is a potentially ideal site for carbon sequestration.

“It would behoove a state like Illinois to be a leader at settling these property rights issues, and not just for climate change purposes but also for job growth and revenue generation,” Endres said. “It’s a resource the state should take advantage of so that it can become a center of innovation for this new industry.”

While this isn’t necessarily the silver bullet to reverse carbon dioxide emissions, Endres says it’s one of many ready-made and already available tools that could slow the growth rate of global climate change.

“This is a technology that will allow us to utilize natural resources like coal while also shrinking its carbon footprint,” he said. “So it’s important to get this framework in place so the industry can really take off, because now you just have a lot of speculations, experimental labs and pilot projects. This is something that needs to get developed sooner rather than later.”

The research was supported by the U.S. Department of Agriculture, the National Institute of Food and Agriculture, and the Energy Biosciences Institute, a collaboration involving the UI, the University of California at Berkeley, the Lawrence Berkeley National Laboratory and BP.

For more information, please contact A. Bryan Endres at 309-292-2766 or aendres@uiuc.edu.

Endres notes that regulatory bodies have already determined that the carbon dioxide stays underground when transported, the next step is to figure out who actually owns the pore space.

“Adding this additional layer of property rights is something that we’re going to need to figure out if we want to go further with carbon sequestration in the state of Illinois and other states that are moving forward with it.”

For more information, please contact A. Bryan Endres at 309-292-2766 or aendres@uiuc.edu.

Property rights

The lack of a settled legal framework that balances private property rights while maximizing the public good ultimately hinders the large-scale commercial deployment of geologic carbon sequestration, according to research by A. Bryan Endres, a professor of agricultural law.
Bisexial teens at highest risk of bullying, truancy, suicide

By Shantia Forrest

Lesbian, gay, bisexual, transgender and questioning youth (those uncertain about their sexual orientation) are at greater risk of suicidal thoughts and suicide attempts, bullying by their peers and truancy, according to a new study by researchers at the UI.

The study, published in the October issue of the journal Educational Researcher, also revealed some striking differences among the various groups of sexual minority youth.

The study, based upon anonymous online surveys of more than 13,000 middle and high school students in Dane County, Wis., included a set of eight questions with low-probability responses that were used to screen out mischievous responders.

Joseph Robinson and Dorothy Espelage, both educational psychologists in the College of Education, found that while the majority of LGBTQ students reported not being at risk of suicide, being bullied or skipping school, they were at greater risk than straight youth.

A little more than 7 percent of straight youth reported thinking about suicide during the prior 30 days, versus 33 percent of LGBTQ students. Bisexial youth were at especially high risk (44 percent), as were questioning youth (32 percent). Bisexual youth also were at elevated risk of suicide attempts, with more than 21 percent reporting that they had made at least one attempt during the prior year.

Nearly twice as many LGBTQ students as straight students – 39 percent versus 20 percent – reported having been bullied, threatened or harassed over the Internet. Again, bisexual youth reported the highest levels of victimization – 49 percent – among sexual minority youth.

LGBTQ students reported a much lower sense of school “belongingness” – the feeling that they belonged at their school, that there were adults they could talk to when they had problems and that graduating was important – than straight youth, particularly during middle school, the study indicated.

About 22 percent of LGBTQ students reported skipping school during middle school, a rate that remained consistent through high school, far exceeding that of straight youth, who reported unexcused absence rates of 7 percent and 14 percent during middle school and high school, respectively.

“For some of the outcomes, such as unexcused absences, we found that LG-BTQ were already at a heightened risk level by middle school,” Robinson said. “We interpret that as a sign that we may need to intervene earlier for LGBTQ students. We can’t look at what straight kids are doing and assume that LG-BTQ kids are at the same risk. The fact that we see these large differences in risk patterns for LGBTQ students in middle school is cause for concern and points to the need for more research to understand why they have disproportionately poorer educational and psychological outcomes.”

At-risk youth

New research by Joseph Robinson, left, and Dorothy Espelage, professors of educational psychology, found that bisexual teens are at greatest risk of bullying, online harassment and suicide.

A nationally recognized expert on bullying, Espelage was among the researchers who participated in the Second Annual Bullying Prevention Summit, held Sept. 21-22 in Washington, D.C. The summit was hosted by the U.S. Department of Education and the Office of Safe and Drug-Free Schools.

BARCODE, CONTINUED FROM PAGE 5

and history of products and are opening new channels of communication between buyers and sellers.

The QR (quick response) code, a new species of two-dimensional barcode that can be scanned with a cell phone, increasingly supplies a direct link between the shopper in the store and information about the scanned product online.

“Customers’ experience and interaction with packaging are undergoing radical and unprecedented changes,” Morris wrote in an article in Packaging World magazine early this year. “Emerging now is a more complex system that includes an entire peer group of customers giving continuous, real-time analysis of the product.”

Manufacturers and retailers are trying to take advantage of this new technology-driven interaction, but they also are struggling to cope, Morris said. The shopper has unprecedented power to identify the best products at the best prices he or she can find. And those who are unhappy with their purchases can let the world know about it in real time.

Companies have a lot at stake – and a lot to gain from more sophisticated barcodes, Morris said. Those who embrace the changes can quickly enlist the online crowd to help develop their products and packaging. Identifiers that capture the life history of each package and its contents can dramatically enhance the security, accountability and traceability of the items people purchase and use every day, he said.

Most people are surprised to learn, for example, that pharmaceutical companies in the U.S. rarely track their inventory once it leaves the manufacturing plant, Morris said. This has resulted in a gray market of drugs that are stolen and redistributied. (In one famous case in March 2010, thieves cut a hole in the roof of a warehouse owned by Eli Lilly & Co. and made off with $75 million in prescription drugs.) Some of these items go to other countries and some end up on pharmacy shelves in the U.S. through unscrupulous distributors, Morris said.

A more sophisticated system could help identify and isolate contaminated drugs, foods or other dangerous products anywhere in the supply chain. Morris said, limiting harm to customers and reducing liability for producers.

If used properly, a global identification system would increase efficiency and profits, expanding the “just-in-time” delivery of goods to retailers. It also would allow companies to get a more detailed picture of the locations, preferences and buying habits of customers, Morris said.

Even though barcodes, QR codes and even RFID (radio frequency identification) tags (which are read by radio waves rather than scanners) are available, Morris said, the structure of the actual identifier is a work in progress. Several organizations, in particular GS1, the global consortium that allocates barcodes, are developing new standards for these identifiers.

“The format is not the issue here,” Morris said. “The issue is, what information can be carried with a physical object, and what use do we make of it? That’s where it really starts getting interesting. Because then you’re not just dealing with a can of soup, a bottle of pills or an aircraft part. You’re dealing with the whole global economy all at once.”

Online Video

http://go.illinois.edu/aervideo

Evolution barcode

Scott Morris, a professor of food science and human nutrition and of agricultural and biological engineering, believes electronic identifiers on packaging will change the way the world does business.

Scott Morris, a professor of food science and human nutrition and of agricultural and biological engineering, believes electronic identifiers on packaging will change the way the world does business.

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NEW faces 2011

Tatyana Deryugina

A lecturer of finance in the College of Business

Education: Ph.D. (economics), Massachusetts Institute of Technology; B.A. (applied mathematics), B.S. (environmental economics and policy), University of California at Berkeley.

Research Interests: Deryugina investigates environmental economics. Her research focuses on how natural disasters affect the U.S. economy, measuring the employment rate, government transfer payments, and disaster aid from federal and private companies. She also studies how effective federal aid is after a natural disaster, measuring post-disaster construction activity, average earnings and non-disaster transfer payments. "Tatyana is an extremely creative researcher who tackles difficult economic questions with rigorous empirical analysis," said Jeff Brown, a professor of finance and the director of the Center for Business and Public Policy. "Her work is highly respected by academic economists, but it also is very relevant to important real-world policy issues. Given her broad interests and her excellent training, we are looking forward to many important research and policy contributions from her in the years ahead."

Courses: Econ 210, "Environmental Economics."

Why Illinois? "Because of its excellent finance faculty and research resources. I consider myself lucky to be part of this department and to be surrounded by so many accomplished and interesting colleagues," Deryugina said. "I'm very excited to teach and work with the high-caliber graduate and undergraduate students here. I also appreciate the diversity and inclusivity present on this campus." 

Prashant K. Jain

An assistant professor of chemistry in the College of Liberal Arts and Sciences

Education: Ph.D. (physical chemistry), Georgia Institute of Technology; B. Tech. (chemical technology), University Institute of Chemical Technology (India).

Research Interests: Physical and material chemistry. Jain focuses on how light interacts with nanoparticles in order to better understand nanoscale and molecular processes. "Jain is a remarkable scholar who has already, in his young career, an impressive record of accomplishments," said Steven C. Zimmerman, a professor and the head of chemistry. "He is a creative individual who is asking some important questions about how light, ions and electrons behave in a confined environment at the surface of a metal nanoparticle. The work should provide insights to those working on applications in catalysis, solar energy and biomedical imaging."

Courses: Chem 544, "Statistical Thermodynamics."

Why Illinois? "Illinois has been my dream school since my pre-graduate school years," Jain said. "The chemistry department at Illinois has a long-standing tradition of excellence. I was particularly impressed by how many now renowned chemists launched their careers as junior faculty here. On my pre-hire visits, I experienced both the intensity and collegiality of the academic community, without any compromise of one for the other." 

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Why do we need new guidelines?
We’ve defined what it means to refurbish computers in a way that’s environmentally sound, so that we’re preventing further destruction of the environment. This accord is what 172 signatory countries will use when there’s a cross-border shipment of used computing equipment for re-use. Right now, there’s all kinds of people who scream and yell that this is dumping toxic electronic waste on Third World countries, but this is actually good, sound, working equipment.

It takes more than a ton of virgin ore and more than 1,000 gallons of water to manufacture a computer, and it uses a large array of critical metals that are in shorter and shorter supply these days. We have approximately 1.5 billion computers now in use throughout the world. If these computers can be tested and refurbished, it will slow the rate at which we have to buy new equipment and further degrade the environment. Plus it will help people in cost-effective ways.

What are some of the materials involved in making computers?
In any computer or cellphone, there are about 70 different elements, and some of the most critical are also the most valued, like gold, silver, copper, platinum and palladium. There’s also arsenic, tin, lead, cadmium, tungsten and indium. Tungsten has about a 20- to 30-year known reserve supply in the world, and there are no recycling furnaces recovering tungsten from their waste stream. Indium, which is element 49 on the periodic table, allows us to make touchscreen monitors and iPhones, and there’s about a 20-year known reserve of indium. If we run out of it, we go back to CRTs.

What can average consumers do to use electronics more responsibly?
Well, there are about 1 billion computers on the planet running Windows XP. If they’re upgraded to Windows 7, they’ll last another five years, and you’ll get the same kind of performance out of them that you would get with a new computer, if you’re an average user. An average user is using his or her computer to do the following tasks: access the Internet and exchange email. Period. So if we didn’t have to re-place those billion computers, it would be a good thing.

The other thing that’s really interesting is that only 27 percent of the average hard drive storage area is used, and that percentage is going down because the hard drive storage is at a higher level and larger, and many people are using the Cloud. There’s an urban myth that says if you want to recycle the hard drive, the more times you “wipe” the data off it, the better, and that’s actually not true. The problem with running a hard drive with a heavy load like data wiping for hours on end is – it destroys the hard drive. If we’re smart about this, we can fully utilize this treasured resource.

What’s it like serving on a UN committee?
I found out if you don’t take a step back when they ask for volunteers, they make you chair of the committee. We have worked on these guidelines for three years. In December, we were in Beijing editing this document sentence by sentence. It must have been 50 degrees in that room; literally I was in my winter coat. I mean, we have worked hard on this!

So what kind of electronics do you and your family members use?
We have refurbished printers, monitors and servers. My cellphone is a T-Mobile Dash, with no touch screen. It’s probably a 4-year-old smartphone, so it’s barely smart. But it meets my needs and does what I want it to do, so I’m a happy camper. Everybody else in the family uses iPhone 3GSs, but they were used when we bought them. I walk the walk.

ON THE WEB
Basel Convention
www.basel.int
Certification programs for electronics recyclers
www.epa.gov/osw/conserve/materials/recycling/certification.htm

Sustainable electronics
A Minute With …™ Ul expert Willie Cade

Editors note: Willie Cade, an adjunct professor in industrial design, is co-chair of the United Nations Basel Convention committee on environmentally sound refurbishment of used computing equipment. The week of Oct. 15, Cade and the convention’s governing body, the Congress of the Parties, are meeting in Cartagena, Colombia, to ratify new guidelines for reusing computers and other equipment across international borders. In the spring semester, he will teach a multidisciplinary graduate course on environmental issues. Cade spoke recently with News Bureau arts and humanities editor Dusty Rhodes about the protocol and the environmental effects of new electronics.

A Minute With …™ is provided by the UI News Bureau. To view archived interviews, go to illinois.edu/goto/aminiutewith.
Honoring academic professionals
CAPE nominations due Oct. 28

Nominations for the 2011-2012 Chancellor’s Academic Professional Excellence award are due by 5 p.m. Oct. 28. UI employees can nominate an academic professional who is currently working and has worked at the university for at least three years. Nominees cannot hold any professorial title nor be a teaching assistant, postdoctoral research associate or lecturer.

A selection committee appointed by the Office of Academic Human Resources recommends six finalists to the chancellor. Nominees are chosen based on work, personal and professional contributions. Finalists will be selected in December.

Honorees receive $2,000, a $1,000 permanent salary increase and a $1,000 one-time budget increase for the next fiscal year. Their names will be inscribed on a plaque in the fourth floor hall of the Office of the Chancellor. Nominations may be made online at http://go.illinois.edu/capanomination. More information can be found at http://www.urban.illinois.edu.

University Primary School
School hosts open house Oct. 20

University Primary School will host an open house Oct. 20 at the Children’s Research Center.

The school serves preschool, kindergarten and first-grade children in a project-based curriculum. Children must be 3 years old on or before July 1 for the preschool classroom and turn 5 before Sept. 1 to be considered for kindergarten enrollment.

Visitors may observe the preschool classroom from 8:30 a.m. until noon and the combined kindergarten-first grade class from 8:30 a.m. until 2:30 p.m.

Applications for the 2012-13 academic year will be available in January. For more information, contact the school director, Ah Lewis, at 217-333-3906 or ahlewis@illinois.edu.

Urban and regional planning
Symposium honors professor Isserman

The department of urban and regional planning will host a symposium celebrating the life and works of Andrew Isserman from 8:30 a.m. to 5 p.m. Nov. 4 and 9 a.m. to 12:30 p.m. Nov. 5 at the Alan C. Campbell Alumni Center.

Isserman, a professor of urban and regional planning who also held an appointment in the Institute of Government and Public Affairs, died Nov. 4, 2010. The symposium will celebrate his important scholarly achievements in regional economics, regional development and urban planning.

Speakers for the event include Luc Anselin, Arizona State University; Peter Baty, University of Liverpool; David Boyle, Northwestern University; Edward Fester, Manchester School of Business; Ann Markusen, University of Minnesota; and Peter Schaffer, University of Luxembourg.

An innovative teacher, Isserman taught courses in economic impact analysis, urban and regional analysis, and federal program analysis, as well as a film and writing course on regional cultures and economies. He was a pioneer in developing methods for analyzing and forecasting economic and demographic change. He also served on editorial boards of the Journal of the American Planning Association and the Journal of Planning Education and Research.

Those interested in attending may register online at www.urban.illinois.edu/issermanSymposium by Oct. 27.

Experts reveal new images, analyses of Spurlock Museum mummy

By Diana Yates
Life Sciences Editor

In 1990, a team of researchers and medical experts placed an ancient Egyptian mummy into a computed tomography scanner at Carle Foundation Hospital, hoping to learn what they could about the person shrouded inside the linen cocoon. Those scans, along with X-rays and analyses of fragments collected from the fraying base of the mummy, revealed that it was a child from a wealthy family, likely from the Roman period of ancient Egypt. The mummy belongs to the Spurlock Museum at the UI, and the researchers were allowed to study it on the condition that they not damage the wrappings or the body. Earlier this year, the team scanned the mummy again using much-improved radiographic techniques. The team will reveal its findings in a symposium on Nov. 2.

“The Return of the Mummy: New Imaging Results on the Spurlock Museum’s Egyptian Mummy” will be the most thorough public presentation yet of many of the types of evidence collected in 1990 and again in 2011. The symposium will begin at 4 p.m. in the Knight Auditorium of the museum. Admission is free.

Dr. Joseph Barkmeier, medical director of diagnostic services at Carle Foundation Hospital and Carle Physician Group in Urbana, conducted the CT scans in 1990 and again this year.

The scans (paid for by Carle) enabled researchers to view a three-dimensional reconstruction of the body on a computer. Some of the scans will be on view at the symposium, along with the actual mummy, facial reconstructions, and images and analyses of the materials used in the embalming process.

In addition to Barkmeier, speakers at the event will include David Hunt, of the National Museum of Natural History at the Smithsonian Institution; Dr. Allan Campbell, clinical professor of pathology and dermatology at the UI College of Medicine at Peoria; Emily Teeter, a research associate at the Oriental Institute museum, University of Chicago; Carter Lupton, curator of ancient history at the Milwaukee Public Museum; and Sarah Wiseman, the director of the Program on Ancient Technologies and Archaeological Materials, Illinois State Archaeological Survey (The survey is part of the Prairie Research Institute at Illinois.)

Wiseman coordinated the first mummy study in 1990-1991 and is the author of “The Virtual Mummy,” a book that documents the research. The symposium is co-sponsored by the Program on Ancient Technologies and Archaeological Materials and the Dr. Allan C. Campbell Family Distinguished Speaker Series, with research funded in part through the Richard and Barbara Faletti Gallery of African Cultures Fund. ◆

American Indian Studies Program
Faculty authors featured Oct. 28

The Illini Union Bookstore will host four faculty authors from the American Indian Studies Program at 4 p.m. Oct. 28. Their readings will cover the area of scholarship and research in the studies program.

The authors:
Jodi A. Byrd, an American Indian studies professor and the author of “The Transit Empire: Indigenous Critiques of Colonialism.” Her collection talks about relations between the U.S. and Southeast Indians and how its history informs the country’s current global policies.

Vincente M. Diaz, who will join the program spring 2012. His book, “Repositioning the Missionary: Rewriting the History of the Missionary,” will be the most thorough public presentation yet of many of the types of evidence collected in 1990 and again in 2011. The symposium will begin at 4 p.m. in the Knight Auditorium of the museum. Admission is free.

Matthew Sakiestewa Gilbert, an American Indian studies professor and the author of “Education Beyond the Mesas: Hopi Students at Sherman Institute, 1902-1929.” His book covers generations of Hopi schoolchildren from northeastern Arizona and how they used compulsory federal education to affirm their way of life and better their community.

Robert Dale Parker, the James M. Benson Professor in English who also is affiliated with the American Indian Studies Program and the author of “Changing Is Not Vanishing: A Collection of American Indian Poetry to 1930.” The book covers a variety of topics such as the American Indian Studies Program and the author of “Changing Is Not Vanishing: A Collection of American Indian Poetry to 1930.” The book covers a variety of topics such as
BRIEFS, CONTINUED FROM PAGE 13

colonialism and the federal government, land, politics and racism.
The event is free and open to the public.

Ebert Film Festival

Festival passes go on sale Nov. 1

Festival passes will go on sale Nov. 1 for the 14th annual Roger Ebert’s Film Festival, or “Ebertfest,” to be held April 25-29 at the Virginia Theater in Champaign and on the UI campus.
The festival will feature films selected by Ebert that he believes have been overlooked by audiences, critics or distributors. Ebert, a UI journalism graduate, adjunct professor and Pulitzer Prize-winner, will again host the event, along with his wife, Chaz Hammelsmith Ebert.
The passes, which cover all 12 screenings during the five-day event, are $315, plus $2 each for processing. They can be purchased starting Nov. 1 through the festival website (www.ebertfest.com), the Virginia Theater website (www.thefestival.org), or the theater’s box office (217-356-9063).

Tickets for individual films will be available April 4. Admission is $13 ($11 for students and seniors).

A thousand festival passes will be available. In recent years, the passes have sold out within one or two months, according to Mary Susan Britt, festival associate director.
The lineup of films, along with additional information on film-associated guests and other festival events, will be announced several weeks before the festival. Updates on the festival, a College of Media event, will be posted on the festival website.

Sponsors and volunteers for the festival are being sought. Those interested should get in touch with Britt at 217-244-0552, or by e-mail at marsue@illinois.edu.

Energy efficiency

Workshops to educate business owners

The UI School of Architecture’s Smart Energy Design Assistance Center will present seven workshops through Dec. 1 to educate Illinois building owners, managers and contractors on how to achieve energy efficiency when working on new and current buildings.

SEDAC engineers and architects will lead the half-day workshops, and representatives from the regulated electric and gas utilities and the Illinois Department of Commerce will present BRIEFS, Page 15

Conference celebrates Austria-Illinois student exchange program

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Thomas Schnöll, counsel general for the Republic of Austria, will be one of the featured speakers at a conference next week at the UI celebrating 40 years of student exchanges between Austria and Illinois. Titled “Change through Exchange: Promoting Global Leadership via Academic Exchange,” the conference will explore ways the university’s Austria-Illinois Exchange Program has strengthened the relationship between the U.S. and Austria.

In the past 20 years alone, the program has facilitated the exchange of more than 2,000 students from the U.S. and the Vienna University of Economics and Business, University of Vienna, and the Vienna Technical University. Most of the U.S. students are enrolled at the UI, but the program accepts some students from other universities, according to Mara Wade, a professor in Germanic languages and literatures and co-organizer of the conference.

“The program is primarily a direct exchange between the U. of I. and a consortium of Vienna universities,” she said. “Students from other schools do participate as external participants. These students come from schools with little or no study abroad infrastructure, and rely on our very well-developed program for their Austrian experience.”

Schnöll will speak at 3:15 p.m. Oct. 27 at Levis Faculty Center. Later that evening, pianist William Kinderman, professor of musicology at the UI, will present a concert and lecture on Beethoven’s “Diabelli Variations” at 8 in the Memorial Room at Smith Hall.

Josif Haslinger, a best-selling Austrian author and professor at University Leipzig, will present the conference keynote address Oct. 28 at 9:15 a.m. in Room 66 of the main Library.

Haslinger is the author of the novels “Openball,” which became an award-winning TV series, and “Das Wassertspiel,” which was made into the movie “Kill Daddy Good Night.” He will screen his 2010 documentary “Nachtsay,” about the 1989 “velvet revolution” against communism in what is now the Czech Republic, featuring interviews with key players including Vaclav Havel.

The 45-minute film will be presented in German with English translations and subtitles by Robert Jenkins, UI study abroad program manager. A discussion will follow the film.

In addition to being an award-winning writer, Haslinger is a popular speaker, known occasionally to burst into “witty and polished rap poetry, mixing high German and superb English,” according to an annual report of the International Writing Program at the University of Iowa.

The conference is free and open to the public. A complete schedule of events is online.

Conference sponsors include the Austrian Consulate, the Austrian Trade Commission, and numerous UI units.

See BRIEFS, Page 15

ON THE WEB

www.germanic.illinois.edu/about/austria/conference
**BRIEFS, CONTINUED FROM PAGE 14**

merce and Economic Opportunity will provide information about current incentive programs.

SEDAC workshops are aimed at public and private sector building owners, managers and contractors. The workshops will take place across the state.

For more information, contact E. Fournier, the center’s managing director, at dfournier@illinois.edu, or visit http://smartenergy.illinois.edu/training-and-outreach.html.

**‘Poems From the Nursing Home’**

Janice Harrington featured Oct. 26

The Illini Union Bookstore will host Janice Harrington, a poet, children’s book author and a professor of English, at the bookstore at 4:30 p.m. Oct. 26. The event marks the release of Harrington’s latest book, “The Hands of Strangers: Poems From the Nursing Home.” Harrington’s newest poetry collection explores what it’s like to live and work in a nursing home, drawing on her experiences as a nurse’s aide.

The event includes a reading by Harrington, followed by a book signing. The event is free and open to the public.

**Translation competition**

Translation careers featured

The UI Center for Translation Studies and the European Union Center will host an all-day program Nov. 4 at the Lewis Faculty Center for winners of the Illinois High School Translation Competition.

Students and teachers from 16 Illinois high schools will learn about careers in translation and interpretation as well as translation-related programs at the university. Students will spend the day playing games related to cultures of their intended language of translation.

The program was started in 2010. For more information, contact Anastasia Lakhitkova, alakhitk@illinois.edu.

**Last chance: Health plan changes can be made through Oct. 28**

`University employees have one more opportunity to change their health plan. A second open enrollment period runs through Oct. 28, with any changes effective Oct. 1. The only change permitted during this special enrollment period will be to change from one health plan to another health plan, according to a mass mailing sent to employees Oct. 3. Employees were advised to visit the NESSIE website for updates. (The Benefit Choice Options booklet also has been updated and is available online.) People enrolled in the PersonalCare plans who are patients at Christie Clinic should review the changes to their coverage since PersonalCare and Christie Clinic announced the termination of that contract. The email suggested employees go to the PersonalCare website for specific questions. The NESSIE website also lists things to consider for current PersonalCare HMO and OAP members.`

**ON THE WEB**

**BENEFITS RESOURCES**

NESSIE: https://nessie.uhr.illinois.edu
Benefit Choice Options booklet: http://go.illinois.edu/BC_booklet12
Special enrollment period: http://go.illinois.edu/specialenrollmentperiod
Urbana Benefits Office: benefits@illinois.edu or 217-333-3111

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**ACEs**

Andrea H. Beller, a professor emerita of agricultural and consumer economics, was honored with the 2011 Stewart M. Lee Consumer Education Award by the American Council on Consumer Interests for her contributions to the field of consumer education.

The council created the award to recognize people who have made a lasting impact in the field of consumer education through teaching, research or service.

Michael Gray, a professor of crop sciences and crop sciences extension coordinator, received the Distinguished Achievement Award from the Entomological Society of America for his research in the field. The society is an international organization serving the professional and scientific needs of entomologists.

Gray was also part of the 10-member European corn borer team that received the Integrated Pest Management Team Award from the Entomological Society. The award recognizes the successful pest-control efforts of a small, collaborative team.

Gray’s research and extension programs have increased the field’s understanding of the biology, ecology and management of the western corn rootworm.

**ENGINEERING**

Two project teams led by engineering professors were among 21 teams honored with the Innovation Corps award by the National Science Foundation.

The team led by Ali E. Abbas, a professor of industrial and enterprise systems engineering, was honored for “iDecideFast – A Web-based application for effective decision making for the layperson.”

Yi Lu, the Ann Schenck Professor of Chemistry, and his team were honored for “Portable sensors using the widely available personal glucose monitor.”

I-Corps teams will receive $50,000 and a specially designed training curriculum by the foundation in order to start their projects and assess their commercial readiness.

The foundation will select up to 25 teams on a quarterly basis to assess the commercial viability of their projects. This was the inaugural year for the awards.

Klaus Schulten, a professor of biophysics and associate director of the Illinois Institute for Biophysical Chemistry, was honored with his "groundbreaking effort to develop computational molecular biology as an important tool to solve problems in biophysics," the stated.

Fellows are chosen for their excellence in science and contributions to biophysics. The fellow will be honored during the society’s annual meeting in February.

Steven C. Huber, a professor of plant biology, was elected the president of the American Society of Plant Biologists for 2012. Huber’s research focuses on the role of protein phosphorylation in enzyme regulation.

The society is an international organization dedicated to promoting plant biology research.

Hugh M. Robertson, a professor of entomology, was honored with a Certificate of Distinction by the Council of the International Congress of Entomology for his contributions to the field. Robertson is known for his research on insect genetics and for his role in insect genome projects.

**Inside Illinois**

**BRIEFS, CONTINUED FROM PAGE 14**

Faculty and staff members and graduate students at the UI have the opportunity to discuss the school’s strategy for Web-based learning with Chancellor Phyllis M. Wise at the “Summit on Online Education: The Present and Future” beginning at 9 a.m. on Oct. 31 at the Alice Campbell Alumni Center.

The morning sessions feature Wise, along with Joanne Dehoney, chief of staff for EDECAUSE, a nonprofit association with a membership roster that includes more than 2,200 colleges, universities and educational organizations nationwide, and Sylvia Maning, president of the Higher Learning Commission, North Central Association of Colleges and Schools, who will speak from the authorized accreditor’s perspective.

The formal presentations will be followed by roundtable discussions on topics ranging from “best practices” in teaching online to impediments in developing courses that blend online and classroom teaching. Participants can move from table to table.

The event is sponsored by the Office of the Provost and Online and Continuing Education. More information is available online at www.provost.illinois.edu/onlineducation.

Complimentary lunch will be provided for participants who register by 5 p.m. Oct. 27. Participants may arrive on Oct. 31 as early as 7:45 a.m. to check in; presentations will begin at 9, and the summit will conclude at 2 p.m.◆

**Achievements**

* A report on honors, awards, appointments and other outstanding achievements of faculty and staff members

Only one to three distinctions are given every four years. Robertson will receive his award at the council’s annual conference in August in Daegu, South Korea. The award includes a prize of $5,000.

Jonathan V. Sweeder, the director of the Biotechnology Center and a professor of chemistry, was appointed the editor-in-chief of Analytical Chemistry, a journal published by the American Chemical Society.

The journal is a peer-reviewed publication dedicated to the extension of new and original knowledge in analytical chemistry.

James B. Whittlefield, a professor of entomology and an associate research scientist at the Illinois Natural History Survey, was honored with the Thomas Say Award from the Entomological Foundation.

The award recognizes significant and outstanding work in the fields of insect systematics, morphology or evolution.

Whittlefield’s research focuses on the systematics and ecology of parasitoid wasps.

The foundation is a national, non-profit organization dedicated to educating young people about science through insects.◆

**ON THE WEB**

**BENEFITS RESOURCES**

NESSIE: https://nessie.uhr.illinois.edu
Benefit Choice Options booklet: http://go.illinois.edu/BC_booklet12
Special enrollment period: http://go.illinois.edu/specialenrollmentperiod
Urbana Benefits Office: benefits@illinois.edu or 217-333-3111
Interactive tool puts physics lab in the palm of your hand

By Liz Ahlberg

Physics is often the stuff of nightmares. For students, the terror lies in the expectation of mastering concepts as foreign as a never-heard language. Professors struggle to effectively teach complex concepts in a limited amount of time. And the expense of laboratory equipment is enough to make a department administrator reach for the antacids.

Physics professor Mats Selen could hold the solution to all three group’s problems in the palm of his hand.

Selen developed the IOLab system, built around a low-cost, easy-to-use, all-purpose handheld device that performs a myriad of functions for both introductory and advanced physics courses.

“There’s nothing like having your hands on something while your brain is thinking about it,” Selen said. “Some effective learning goes on when your hands are tactiley doing something and you’re seeing it happen, as opposed to just hearing or reading about it.”

The device has two parts. One is a wireless, battery-powered black box, slightly smaller than a graphing calculator, containing a small computer, a radio chip and positional sensors. The other component contains a receiver and links to a computer through a USB cable. The IOLab – for Interactive Online Lab – can measure electrical signals, frequency spectra, time constants and more. A user could even measure the speed of light merely equipped with the IOLab, a piece of scrap aluminum and a ruler.

Selen is testing the IOLab and accompanying software in Physics 100, an introductory course with 500 students, many of whom have little or no physics experience. The software guides the students through a lesson and gathers data from the IOLab device for analysis. The students can see, in real time, how a plot changes based on the motion of the wireless component.

“I’m seeing a lot of ‘aha!’ moments,” said Anthony Hegg, a teaching assistant who oversees several of the discussion sections using the IOLab. “I think they’re getting it a lot quicker than I’ve seen it before.”

Selen and colleagues have written four IOLab modules on motion, acceleration and velocity for Physics 100. For example, one unit tackles the concept of relative motion, or how a moving object appears to another object in motion. In the activity, labeled “Tumble Buggies,” students attach the two IOLab components to a pair of battery-powered toy cars. One car is rigged to go slower than the other, so the IOLab’s accelerometer and positional sensors can track their relative movements.

“It sounds simple but it’s actually one of the hardest things they do all semester,” Selen said. “It’s very difficult to wrap your mind around relative motion. With this, you can see that by moving one part or the other, it changes how the speed is recorded relative to the receiver.”

The tumble buggies module gives the students four tasks. They begin with guided, simple experiments to establish the basic concepts. Then, they are asked to predict the outcomes of different scenarios – the faster car chasing the slower car, or the two cars moving in different directions. For each, the students make predictions, then design their own experiments to test their ideas.

The challenge for the tumble buggies lab is to explore the different scenarios without the faster car falling off the table or the receiver-bearing car reaching the end of its tether to the computer.

“They’re definitely having fun with it,” Hegg said. “Since it’s also taking data on the computer, they can see the outcomes of different set-ups.”

Selen’s goal is to integrate it with Smart Physics, a computer-based multimedia curriculum that Selen, Stelzer and physics professor Gary Gladding have developed to use in place of expensive textbooks.

However, Selen designed the affordable, multifunctional lab devices to reach beyond the UI. He believes the IOLab could be extremely valuable for community colleges and other institutions that lack the space or resources for a fully outfitted physics laboratory. In addition, they could enable online courses to add lab elements.

Selen is optimistic that students’ positive responses to the IOLab devices and the hands-on activities show that some are warming up to an often intimidating subject. The majority of students enrolled in introductory physics are majoring in other fields and need physics to fulfill a requirement. However, Selen hopes these students will remember their time in these courses fondly.

“If, 20 years down the road, they remember physics as kind of a cool class they took, that’s a huge success in my opinion,” Selen said. “That means that as citizens of the world, they may understand that it’s important for people to learn science and engineering and math. If you can do some activity with them that they enjoy and at the same time learn something, it’s a good experience.”

Hands on

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