

# engineeringNews

NOVEMBER 13, 2008 VOL. 79, NO. 7F

RACHEL SHAFER PHOTO



## NO SNOW. NO SLED. NO PROBLEM.

**FACE FIRST:** BioE sophomore Hinesh Patel flies down 4.0 Hill on a block of ice. Patel and other Tau Beta Pi members spent the afternoon of October 18 iceblocking — the sport of sliding down grassy hills on blocks of ice. (You actually sit or lie on a towel, then on the ice.) Patel, who tried the activity for the first time, reports, “It was kind of scary but also exhilarating.”

## This sushi makes a good drink

RACHEL SHAFER PHOTO



**KHMER BEAR:** An arsenic removal project called “Sushi 4.0” took CEE senior Jessica Huang to rural Cambodian villages this summer.

**H**ere’s how CEE senior Jessica Huang explains it:

In the 1980s and 90s, the Cambodian government and other organizations launched well-meaning campaigns to install wells in rural villages, sometimes one well for every two homes. Clean

water became plentiful and convenient, and the wells turned into prized community possessions.

But, in an unfortunate accident of geography, some sources of Cambodia’s groundwater contain dangerous levels of naturally occurring arsenic, a fact not discovered until later. A tasteless, colorless, odorless chemical, arsenic remains in the body once ingested and slowly poisons it, causing disfiguring lesions, cancers and, in some cases, death. Two million Cambodians are at risk.

*Continued on page 2*

## POP QUIZ



**This Thanksgiving, will it be turkey or tofurkey?**



**Edward Skjefte,**  
EECS junior

“I haven’t had tofurkey, but it just sounds weird.”



**Debra Zepeda,**  
CEE sophomore

“Turkey. I’m not a big fan of tofu.”



**Courtney King,**  
CEE junior

“Definitely tofurkey. It’s surprisingly better than expected. I don’t eat meat. It’s bad for everyone, including the turkey.”



**Clarissa Harrison,**  
ME sophomore

“I don’t eat tofu on principle.”

## Arsenic remediation

Continued from page 1

Now there's an effort to right the wrong without destroying a useful infrastructure. Enter Huang. She's part of a Berkeley student team guided by Energy and Resources Group adjunct professor Ashok Gadgil. Their answer may be "sushi."

Sushi 4.0—as the team calls its prototype built from layers of rolled iron sheets—removes arsenic from water in a low-cost process called electrochemical arsenic remediation. Small amounts of electricity continuously dissolve the sheets of iron, forming rust. Rust absorbs the arsenic. The device, in its final form, will filter out the arsenic-laden rust or facilitate its settling.

Huang spent a month in Cambodia this summer helping her team test the prototype and study its implementation in partnership with local contacts.

"What do you tell people [who have arsenic in their water supply] when they have *no* alternative? Don't use the water? That's why we want to get something out there to them," she says.

Her involvement began in ER 291, Design for Sustainable Communities, a class she took from Gadgil last spring. His assignment: build a working prototype based on groundbreaking technology that had already been developed at the Lawrence Berkeley National Laboratory. To meet design goals, the device had to produce less than 120 milligrams of waste per person per day.

While advanced technologies exist for eliminating arsenic from water, rural Cambodia presents several design challenges. The solution must be durable (can it survive a mountain trek and river crossing?), cost pennies per person per day, and require little maintenance. It must be designed so that users can maintain it and become vested owners.

Long story short: After hours and hours in the lab, after several prototype ideas and iterations, the team flew Sushi 4.0 to Cambodia, and the device yielded encouraging results. Huang's group is now developing a licensing strategy so their solution can be scaled up for manufacturing. (Huang also majors in business administration.)

For her part in the team project, Huang was awarded a J.W. Saxe Prize for Public Service this spring and pooled the \$2,000 award that came with it back into the research. She will graduate in December after passing the team's knowledge on to new student researchers (Interested? E-mail [jesshuang@berkeley.edu](mailto:jesshuang@berkeley.edu).) but is taking with her a new appreciation for water. ■

# La Burrita

1832 Euclid Ave.  
Berkeley, CA 94709  
(510) 845-9090

**Any small burrito with small fountain drink**

## \$4.49

Courtesy of  
**<engineeringNEWS**

not valid with any other discount, coupon or offer

expires 12/31/08

### Get in the News!

Win an award? Have an event you'd like publicized? Want to write for us? E-mail the editor of *Engineering News*, [engnews@coe.berkeley.edu](mailto:engnews@coe.berkeley.edu).

## VIEW FROM the TOP

conversations with innovative leaders

**Wednesday, November 19<sup>th</sup>, 4:30–5:30pm**  
SIBLEY AUDITORIUM | BECHTEL ENGINEERING CENTER

### Arun Sarin

CHIEF EXECUTIVE (RETIRED)



vodafone

Arun Sarin will speak on  
"Leadership in a  
Changing World"

Refreshments will be provided



[www.coe.berkeley.edu/events/view-from-the-top](http://www.coe.berkeley.edu/events/view-from-the-top)



# < announcements >



Get the complete College calendar at  
[www.coe.berkeley.edu/events](http://www.coe.berkeley.edu/events).

## Intern during the semester

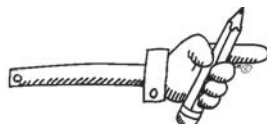
Now you can do a six- to seven-month extended internship at a leading biotech company through the Bioengineering Cooperative Education Internship Program! Take a semester off to work at one of the preapproved companies and get guaranteed readmission when you return. All majors welcome. Application deadline is MONDAY, NOVEMBER 17. Learn more and apply now at <http://bioeng.berkeley.edu/coop/students.php>.

## Public Utilities Career Fair

Don't miss this career fair on TUESDAY, NOVEMBER 18, which begins with a presentation at 5 p.m. in 502 Davis Hall. The event is hosted by the Cal chapters of Chi Epsilon and the American Society of Civil Engineers. Companies attending include EBMUD, CalTrans and the California State Public Utilities Commission. For more information, e-mail [madelineziser@gmail.com](mailto:madelineziser@gmail.com).

## Fall Poster Session

Come see groundbreaking undergraduate research! The Fall '08 Engineering and Science Poster Session will be held THURSDAY, NOVEMBER 20, from 11:30 a.m. to 1 p.m. in the lobby of Hearst Memorial Mining Building. Undergraduate researchers will display posters explaining their work and be on hand to answer questions. For more information, go to [www.coe.berkeley.edu/students/uro-poster](http://www.coe.berkeley.edu/students/uro-poster).



## Network with industry reps

Enjoy a fine meal and rub elbows with more than 18 company representatives at "Evening with Industry," hosted by Cal's chapter of the Society of Women Engineers. The event will take place THURSDAY, NOVEMBER 20, 6 p.m., at HS Lordship's Restaurant in Berkeley. For tickets and details, e-mail event organizers at [eveningwithindustry08@gmail.com](mailto:eveningwithindustry08@gmail.com).

## Invention competition

Submit your idea for a great invention to Absolutely New's First Annual Student Invention Competition. The first place winner will receive intellectual property protection, market research, product development and marketing help valued at \$20,000. Deadline to apply is SUNDAY, NOVEMBER 30. For application and details, go to [www.absolutelynew.com/contest/](http://www.absolutelynew.com/contest/).

## ASUC grants

If you or your student organization need money for travel, projects or programs, consider applying for ASUC grants. The deadlines are approaching! Go to [www.asuc.org/grants](http://www.asuc.org/grants) for details and application information.

## Career Center in your inbox

Sign up for Engineering CareerMail through Callisto and receive biweekly notices about workshops, career fairs, infosessions and more. <http://career.berkeley.edu/>

## QUESTIONS NOT EVEN 5+ YEARS OF GRAD SCHOOL WILL HELP YOU ANSWER



PHD IN ENVIRONMENTAL ENGINEERING



PHD IN PHYSICS



PHD IN BIOLOGY



PHD IN MECHANICAL ENGINEERING



PHD IN POLITICAL SCIENCE

[www.phdcomics.com](http://www.phdcomics.com)

# <of note>



It's an exciting time to be in Washington, D.C., right now, and if you're a White House Fellow, you have one of the best seats in the house. Just ask **BioE associate professor Dan Fletcher**.

On sabbatical this year, Fletcher is one of 14 fellows appointed by President Bush to participate in the highly prestigious program, which started September 1 and runs through August. Each fellow works full time as a paid special assistant to a cabinet member or senior presidential advisor. They also participate in roundtable discussions and travel outside the capital to examine federal policy at work nationally and internationally.

Fletcher works in the Office of Science and Technology Policy, which directly advises the president. One of Fletcher's high points, he says, has been a two-and-a-half hour meeting with President Bush.)

"This experience is giving me a much better perspective on how scientists and engineers can — and must — participate in the political process in order to address national problems and support the need for basic research," Fletcher e-mails from D.C. "If academic researchers can learn how the government works and how to build coalitions that address real problems, we can have a significant and important impact on the way our country runs." ■

## OFFICE HOURS

An interview with EECS assistant professor Ali Javey

**J**avey earned his B.S. in chemistry from Old Dominion University (Norfolk, Virginia) in 2001 and his Ph.D. in chemistry from Stanford in 2005. In 2006, he joined the Berkeley faculty. His research focuses on high-performance nanoelectronics, flexible electronics, novel biological and chemical sensors, electron transport in nanoscale, hierarchical assembly of nanostructures and nanofabrication.

**Call him:** Ali

**Teaching this fall:** EE 143, Microfabrication Technology

**Office hours:** Monday, 10:30 to 11:30 a.m.

**Earliest science experiment:** "I had Legos as a kid and I liked to hook them to light bulbs. In trying to get them to work, I accidentally electrocuted myself. Multiple times."

**When people find out he teaches at Berkeley:** "They say, 'Wow, really? But you look like a student.' I look young, I know. But since coming to Berkeley, I think I've aged some."

**Biggest problem facing his field:** "Electrical engineering is evolving so fast, and we at Berkeley need to be in front of the field. We're always asking ourselves, what will it look like 50 years from now? We know silicon electronics will still play a major role 10 years hence, but our job is to be thinking: What's after that? What's the next big thing? I don't know for sure, but I think new materials will play a major role in further enhancing the functionality of devices that are based on silicon."

**Has a weakness for:** Dark chocolate.

**How students today differ from his student days:** "Well, it wasn't that long ago that I was a student, so I think we're pretty similar actually. I feel like I can relate. Right before exams, I know what students are

going through; and for graduate students, I know what it's like when research isn't going well."

**Ringtone on his iPhone:** "I got this iPhone because of peer pressure from other EE faculty. They kept showing me what it could do. So I had to get it. Normally my phone is on mute, but during the summer the ringtone is 'Marimba.'"

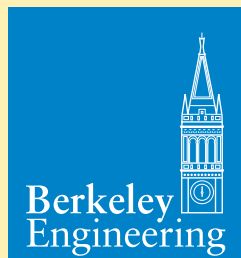


**If he could teach any course:** "Chemistry for electrical engineers. I think chemistry will play a larger and larger role for electrical engineers. My background is in chemistry; I actually don't have any degrees in electrical engineering. The class would link my past and present."

**In his spare time:** "I like to hike and explore the Bay Area since I'm not from here originally. I'm Persian."

**Best thing about his job:** "Academic freedom! If I have an interesting idea, or if a student has an idea, we can explore it without getting approval from higher-ups. I also like interacting with students, especially because Berkeley students are of such good quality. Undergraduate students always challenge me with their questions, and graduate students often come up with new ideas. It's exciting." ■

## engineeringNews



University of California, Berkeley  
Engineering News  
312 McLaughlin Hall  
Berkeley, California 94720-1704  
Phone: 510 642.5857  
Fax: 510 643.8882

engnews@coe.berkeley.edu

**www.coe.berkeley.edu/news-center/  
publications/engineering-news**

Published biweekly on Thursdays during the academic year by the Engineering Marketing and Communications Office, College of Engineering, University of California, Berkeley.

Copy deadline is 4:00 p.m. on the Monday preceding publication.

Rachel Shafer  
managing editor and writer

Megan Mansell Williams  
reporter

S. Shankar Sastry  
dean

Karen Rhodes  
executive director, marketing and communications