

engineeringNews

APRIL 23, 2009 VOL. 79, NO. 75

RACHEL SHAFER PHOTO



PASS/NO PASS

GAME ON: Engineers from EECS and BioE face off, part of an Engineering Week basketball tournament that ended with mechanical engineers winning the championship. E-Week activities such as sports competitions and a wine and cheese party persuaded students to suspend coursework for a bit to socialize, meet others and have fun.

His next thrill ride

ME alum twists roller coasters into a satisfying career

PHOTO COURTESY OF TIM JACOBI



AN ENGINEER'S DELIGHT: Roller coaster engineer Tim Jacobi recommends the Medusa coaster at Six Flags Discovery Kingdom in Vallejo for its bending track and sophisticated control system.

Tim Jacobi (M.S.'08 ME) adores hurtling through the air, whipping around hairpin turns and feeling his stomach do loops. The December graduate is a roller coaster junkie who put his graduate studies on temporary hiatus in 2004 to join a small cadre of mechanical engineers who specialize in amusement park rides. Now employed at thrill ride manufacturer S&S World-

wide, Jacobi designs roller coasters.

"I always thought coasters were cool," says Jacobi, recalling the excitement of his first ride aboard a suspended coaster known as the Hangman at the now-shuttered Opryland theme park in Nashville, Tennessee.

Continued on page 2

POP QUIZ



What's the best place to hold a review session?



Geoff Theiss, ChemE senior

"Main lecture room at the Goldman School of Public Policy. The chairs swivel nicely, and there's a slope to the room so you don't have to worry about seeing over people."



Jacob Neal, Eng.Sci. junior

"If it's just me with friends, Dwinelle. You can have your own space with your own chalkboard, and they always have rooms available."



Tara Srinivasan, BioE sophomore

"For GSI-held review sessions, 105 Stanley is a nice big lecture hall with a projector screen and board space. People can come and go easily."



Brian Yeh, IEOR junior

"101 O'Brien. The room is not so good, but they have this guy there named Jeff Strahl who holds the best math review sessions. He's the bomb."

His next thrill ride

Continued from page 1

Since joining S&S, Jacobi has worked on more than a dozen big projects, including swing rides — attractions with gigantic pendulum arms that soar back and forth. One of the biggest is the Skyhawk, a ride in Ohio's Cedar Point amusement park that sends riders flying 125 feet in the air.

For Jacobi, creating roller coasters means grappling with such factors as fluids, dynamics, machine design and stress analysis.

"There are good coasters and bad coasters," he says. "It's not easy to design a good ride."

His latest — and perhaps most spine-tingling — assignment involves devising the launch system for what is expected to be the world's fastest pneumatically launched roller coaster. The ride, set to debut in Germany this summer, will propel passengers from zero to 135 mph in less than three seconds.

While creating such excitement is an obvious goal, Jacobi considers safety a priority. Rides must have an inherently sound design, he says, and include redundant safety features or safety factors requiring structural elements that are many times stronger than needed for the loads they carry. "On real critical areas, where people's lives are depending on it, you overdesign for it," he says. "We're morally responsible to be safe."

Jacobi's engineering path has taken its own share of twists and turns. As a Yale undergraduate, he weighed several career options before turning to mechanical engineering. He graduated in 2000 and spent a year doing engineering analysis for Zamperla, a ride manufacturer in Vicenza, Italy. Returning to the United States as the amusement industry tanked following the September 11 terrorist attacks, Jacobi signed on as a maintenance worker at Playland Park in Rye, N.Y. By the fall of 2003, he decided it was time for more schooling and headed to Cal, where he studied mechanical design with ME professor Alice Agolino.

When his dream job opened at S&S, "I decided to jump on it," he says, and later found the time to write his thesis and complete one remaining class for his degree.

"It was clear that his passion was roller coaster engineering, and we figured out a way to make that dream happen," says Agolino of her first-ever student specializing in roller coasters. ■

—Written by Abby Cohn and first published in *Innovations* January 2009.

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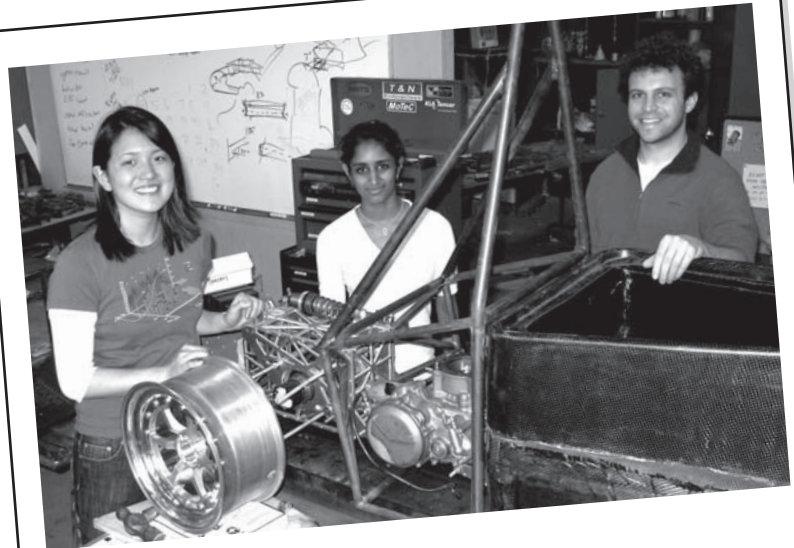
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FAST TIMES FOR TEAM FORMULA SAE

IN THE SHOP: Cal's formula-style race car team is preparing for the Formula SAE West competition in June, where college teams race and exhibit the small-scale cars they've designed and built. Above, from left, ME junior Raechel Tan, ME junior Jaya Iyer and ME graduate student Joe Silber in the team's shop at Richmond Field Station. Members experimented with a new chassis this year, eschewing a standard steel tube frame for a carbon-fiber monocoque, a one-piece "skin" that adds sophistication, subtracts weight and makes it easier to assemble the car. Above right, Iyer has been on the team since her freshman year. fsae.berkeley.edu



announcements



Get the complete College calendar at www.coe.berkeley.edu/events.

Nano conference

You're invited to attend the Berkeley Nanotechnology Forum 2009 on SUNDAY, APRIL 26, 9 a.m. to 6:30 p.m., at Haas School of Business. The forum will feature speakers on molecular engineering, renewable energy, nanoelectronics, health care and the business and public policy of nanotechnology. See details and register to attend at www.ocf.berkeley.edu/~nano.

Spring dance

All engineering undergraduates are invited to the first annual "Spring Fling" dance on FRIDAY, MAY 1, in the Betty and Gordon Moore Lobby of Hearst Memorial Mining Building. The casual dance, organized by undergrads, will run from 8 p.m. to midnight and feature the DJ talents of CEE student James Jackson. Tickets are \$5. Contact Kris at kriskorth@berkeley.edu for details.

A send-off for seniors

Congratulations to the class of 2009! You are graduates of the greatest public university in the country and one of the finest engineering colleges in the world. The College of Engineering invites you to a festive celebration on MONDAY, MAY 11, 5 to 6:30 p.m., in the Betty and Gordon Moore Lobby of Hearst Memorial Mining Building. Reserve your space by e-mailing Dawn Kramer at bears@berkeley.edu. We wish you much success and happiness and welcome you to the alumni community!

Last Engineering News

This is the last regular issue of *Engineering News* for the 2008–2009 academic year. Look for our special Commencement issue on THURSDAY, MAY 14, in the blue newsstands and of course at

Commencement. Good luck on finals, and have a wonderful summer break! Send feedback and suggestions to the editor anytime at engnews@coe.berkeley.edu.

Feed the Bears!

Are you in need of a Finals Week study break? Then stop by the Berkeley Engineering Alumni Relations (BEAR) "Feed the Bears" table on FRIDAY, MAY 15, 3:30 to 4:30 p.m., outside Kresge Library at the Bechtel Engineering Center. Grab a free snack and drink! We'll see you there.

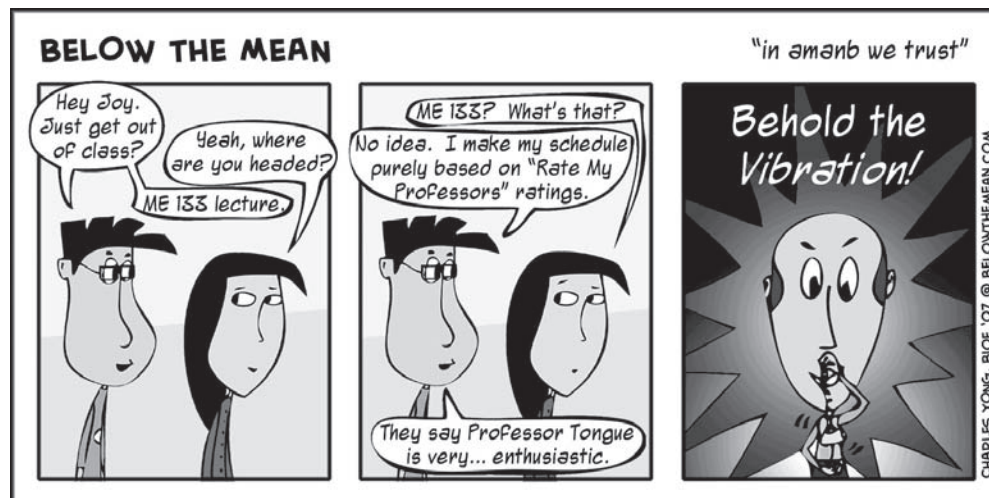
Career Center on northside

All engineering majors are invited to meet with a Career Center counselor for drop-in hours EVERY TUESDAY, 3 to 5 p.m., in the ASCE student office, located on the third floor of Davis Hall (main entrance). Before the semester ends, stop by and ask questions about resume building, interview skills, job or internship possibilities, careers in engineering and Career Center resources. career.berkeley.edu

Spend the summer in Germany

Have summer plans yet? Spice up your resume with a research internship at Hamburg University of Technology, a prominent research university in Germany. You will be working one to two months with a team of highly motivated young scientists at the Institute of Mechanics and Ocean Engineering. We will provide you with all the support you need, including an attractive grant of \$500/month that makes up for most of the extra costs of staying abroad. Put your knowledge into practice doing research, and at the same time stay in one of Europe's most beautiful cities. Interested? Contact david.hilbert@berkeley.edu or steidl@tuhh.de.

"Below the Mean" is created by BioE alum Charles Yong (B.S.'07).



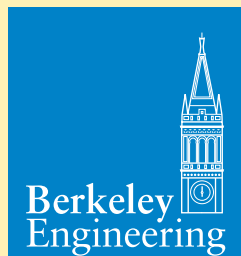
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Rock star professor

In March, BioE/ChemE professor **Jay Keasling** was named one of *Rolling Stone* magazine's "100 Agents of Change." Keasling was chosen for his work engineering microbes to produce cheap malaria drugs, synthesizing biofuels and advancing the field of synthetic biology. Other honorees included Al Gore, Robert F. Kennedy Jr., Bill Gates and President Barack Obama. Get all the details at www.rollingstone.com/news/story/26754176/the_rs_100_agents_of_change. ■

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University of California
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

OFFICE HOURS

An interview with MSE professor Yuri Suzuki

Yuri Suzuki earned a Ph.D. in applied physics from Stanford in 1995. In 2003, she joined the Berkeley faculty after five years on Cornell University's faculty. Her research focuses on the synthesis and characterization of complex oxide thin films and nanostructures, magnetism at surfaces and interfaces at the nanometer-length scale and magnetic junction and photonic devices for information technologies.

Call her: Professor Suzuki

Teaching this spring: MSE 117, Properties of Dielectric and Magnetic Materials

Office hours: Tuesday, 2 to 3 p.m.; Wednesday, 10:30 to 11:30 a.m.

Earliest science experiment: "I entered school science fairs, but I don't really remember them. I've never been the tinkering type. I enjoy science in a more theoretical way, for the process."

How she got into the field: "I grew up in Berkeley and went to a college prep high school, but when I started college [at Harvard], the math and physics classes were a rude awakening. I wondered, 'Do I really belong here? What should I really be?' I was pretty scared, actually. But I kept at it. My dad is a physics professor here at Berkeley, and I avoided physics initially because of my dad. Now, some of his colleagues are my colleagues, too."

Has a weakness for: "Sweets. And my kids. If they want to play with me, I'm easily distracted."

If she could teach any course: "It would be on the materials science of gourmet cooking. What are you doing to food when you cook it? And what about those different pots and pans... is All-Clad worth the money? Of course, it would be a demonstration class, and we'd eat lunch. I'm not a terribly good cook, but a class like that would be fun."

Biggest problem facing engineering over the next 50 years: "Reducing our footprint on the environment. Of course, this isn't just a problem for engineering, but various engineering disciplines can certainly contribute by, for example, building energy efficient systems. I do magnetism research, and we're



RACHEL SHAFER PHOTO

asking ourselves whether we can manipulate electrons via their spin and not so much their charge, so that the electrons don't dissipate as much electricity. And now that I have kids and think more about what the planet will be like when they are grown, it's not just a theoretical problem. It hits home. We need to do better to make our impact sustainable."

In her spare time: "I spend time with my kids. We like to take walks or go hiking. I used to play the violin, and I'd like to take it up again. Maybe in 10 years."

Best thing about her job: "I get to help undergraduates learn how to think and help graduate students become scientists. Once you're out in the real world, it's not as much about knowing the material as it is about being able to think and go through an analytical process." ■