The Caltech Health Fair gears up for 2011 session

CAROLINE YU
Contributing Writer

The Caltech Premed Association is holding its second annual health fair Thursday, May 19, from 12:00-1:00 PM on San Pasqual Walk. Led by sophomore Catherine Xie, this year’s health fair features demonstrations and representatives from a wide range of organizations and clubs. Xie envisioned a “student health fair organized by students for Caltech students to increase Caltech students’ awareness on a variety of significant and readily applicable physical and mental health topics.” Notably, two residents, an internist, an OB-GYN, and a sleep technician from Huntington Hospital will be attending the fair. Other organizations such as the National Alliance for the Mentally Ill (NAMI), the Counseling Center, and the Caltech Women’s Center will also be represented.

The purpose of the fair is to raise awareness about health related issues, as well as draw attention to the number of health services that are readily available. The fair also encourages students to exercise by offering demonstrations in a number of sports and activities. For example, the Bollywood Dance Crew, Alpine club are just a few of the clubs performing. Other Caltech organizations such as the Health Advocates, Pre-dental Association, and the Caltech Y Outdoors will also be present, to offer basic health tips. The Jazz Band will be performing, creating a relaxing ambiance. There are also incentives for the casual onlooker to attend. There will be free food, a health jeopardy game, and giveaways. Prizes include a massage chair, iTunes gift cards, and other freebies. Several professional masseuses will be offering free massages to winners of Health Jeopardy. The fair is sponsored by ASCIT, Counseling Center, Graduate Office, Human Resources, Student Affairs, the Caltech Y, Caltech Premed Association, and Aetina Health.

Under the guidance of the Caltech Y staff and other health experts, a group of students coordinated the logistics, volunteers, promotions, funding, correspondence with groups and entertainment. Compared to last year’s fair, Xie said that this year’s fair was larger, with “many more groups from off campus and also students participating…The increased participation should give a wider variety and broader view to students about how leading a healthier lifestyle can be made through easy, enjoyable and painless changes.”

Last year’s Health Fair offered many of the exhibits that will be available this year, including massages and health demonstrations. - Steph Kwan

News briefs from around the globe

Provided by Tech correspondent Sam Barnett

Need to know < 100 words about the world this week – topics sorted from good to bad by Sam Barnett – links to full stories available at barnett.caltech.edu/news

Japan helps victims ¥ 1 million ($1,200) per family displaced by nuclear disaster

Obesity gene discovered 1/10 of adults suffer from obesity – British team finds key gene

Solar powered airplane 1st international flight completed – average speed is only 44 mph

Bees stolen in Scotland £ 2 million ($3 million) neuroscience research impeded by theft

Severe storm damage > 10,000 buildings destroyed by tornados – over $2 billion in losses

Attacks against Israel 13 Israeli soldiers wounded by rioters on nation’s independence day

Guatemala massacre 27 farmers decapitated in region used by Mexican drug cartels
Please join a selection of Caltech’s Chamber Musicians on Sunday, May 22 in Dabney Lounge for an afternoon of music appreciation. Reception to follow.

See the full program at:
http://www.music-theater-art.caltech.edu/chamber_music/index.html

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Caltech scientists develop new way to process metallic glass

PASADENA, Calif.—Stronger than steel or titanium—and just as tough—metallic glass is an ideal material for everything from cell-phone cases to aircraft parts. Now, researchers at the California Institute of Technology (Caltech) have developed a new technique that allows them to make metallic-glass parts utilizing the same inexpensive processes used to produce plastic parts.

With this new method, they can heat a piece of metallic glass at a rate of a million degrees per second and then mold it into any shape in just a few milliseconds.

“We've redefined how you process metals,” says William Johnson, the Ruben F. and Donna Mettler Professor of Engineering and Applied Science. “This is a paradigm shift in metallurgy.” Johnson leads a team of researchers who are publishing their findings in the May 13 issue of the journal Science.

“We've taken the economics of plastic manufacturing and applied it to a metal with superior engineering properties,” he says. “We end up with inexpensive, high-strength parts made in the same way plastic manufacturers do.”

“We've redefined how you process metals,” says Johnson. “We end up with inexpensive, high-strength parts made in the same way plastic manufacturers do.”

The current pulse heats the entire rod—which was 4 millimeters in length and 1 millimeter in diameter—over 1,000 degrees C. The material softens and becomes a thick liquid that can be molded and shaped. In this liquid state, the atoms have had enough time to form crystals. By avoiding crystallization, the material keeps its amorphous structure, which is what makes it strong.

Common window glass and certain plastics take from minutes to hours—or longer—to crystallize in this molten state, providing ample time for them to be molded, shaped, cooled, and solidified. Metallic glasses, however, crystallize almost immediately once they are heated to the thick-liquid state. Avoiding this rapid crystallization is the main challenge in making metallic-glass parts.

Previously, metallic-glass parts were produced by heating the metal alloy above the melting point of the crystalline phase—typically over 1,000 degrees C. Then, the molten metal is cast into a steel mold, where it cools before crystallizing. But problems arise because the steel molds are usually designed to withstand temperatures of only around 600 degrees C.

As a result, the molds have to be frequently replaced, making the process rather expensive. Furthermore, at 1,000 degrees C, the liquid is so fluid that it tends to splash and break up, creating parts with flow defects.

If the solid metallic glass is heated to about 500-600 degrees C, it reaches the same fluidity that liquid plastic needs to have when it's processed.

But it takes time for the heat to spread through a metallic glass, and by the time the material reaches the proper temperature throughout, it has already crystallized.

So the researchers tried a new strategy: to heat and process the metallic glass extremely quickly. Johnson’s team discovered that, if they were fast enough, they could heat the metallic glass to a liquid state that’s fluid enough to be injected into a mold and allowed to freeze—all before it could crystallize.

To heat the material uniformly and rapidly, they used a technique called ohmic heating. The researchers fired a short and intense pulse of electrical current to deliver an energy surpassing 1,000 joules in about 1 millisecond—about one megawatt of power—to heat a small rod of the metallic glass.

The current pulse heats the entire rod—which was 4 millimeters in diameter and 2 centimeters long—at a rate of a million degrees per second.

“We uniformly heat the glass at least a thousand times faster than anyone has before,” Johnson says. “Taking only about half a millisecond to reach the right temperature, the now-softened glass could be injected into a mold and cooled—all in milliseconds. To demonstrate the new method, the researchers heated a metallic-glass rod to about 550 degrees C and then shaped it into a toroid in less than 40 milliseconds. Despite being formed in open air, the molded toroid is free of flow defects and oxidation. In addition, this process allows researchers to study these materials in their molten state, which was never before possible.

For example, by heating the material before it can crystallize, researchers can examine the crystallization process itself on millisecond time scales. The new technique, called rapid discharge forming, has been patented and is being developed for commercialization, Johnson says. In 2010, he and his colleagues started a company, Glassmetal Technology, to commercialize novel metallic-glass alloys using this kind of plastic-forming technology.

The other authors on the Science paper, “Heating crystallization in glass-formingmetalssubmillisecond heating and processing,” are Caltech’s Georg Kaltenboeck, Marius D. Demetriou, Joseph P. Schramm, Xiao Liu, Konrad Samwer (a visiting associate from the University of Gottingen, Germany), C. Paul Kim, and Douglas C. Hofmann. This research benefited from support by the II-VI Foundation.

You’re Invited...To a Caltech Picnic
When: Saturday, May 21st, 11 AM
Where: Huntington Botanical Gardens

Join other students, faculty, and staff for lunch at the Huntington and then stay for the day to explore the renowned Huntington Library, Art Collections, and Botanical Gardens. Don’t miss out on this wonderful opportunity to interact with others outside of the campus environment, and to experience all the Huntington has to offer.

Choose from a variety of salads or sandwiches along with chips, fruit, house baked cookies and a beverage when you sign up. A limited number of spaces are available - Undergraduate Students and Graduate Students and Post Docs may sign up for themselves and a guest as space permits. Sign up beginning this Friday, May 6th at 10:30 AM at the Caltech Y (the $15 fee is required when you sign up).
Techers continue to stand by Ditch Day

By some standards, this year's ASCIT formal was a great success. While there were some complaints about the DJ's confusion about what actually constituted mixing two songs together (as in, playing one song, pausing, playing another song, and then returning to the original), the length of time the students were stuck at the formal and some problems with drinks, overall almost everyone has been positive.

On top of this, the formal ran about 5,000 dollars cheaper than previous formals. Before anything else, congratulations to ASCIT on doing a good job running the formal. The ticket prices were in line with what students desired in a survey. The students who went were pleased: not a single door dash was to be found in the photos. Tickets were so sought after that people managed to start scalping them. Yet, a phrase from this immediately

"Fakes" are clearly not a mean trick played on poor, gullible underclassmen. So maybe the resentment is about ditch day itself. Or more generally, the Caltech social structure.

So let's assume most campus traditions do suck. It's true: the house system is not perfect. I'm aware of this, and I'm not saying the system is perfect. One can also send anonymous emails that attempt to sabotage the coordinated efforts of the senior class to create an experience which can be found at no other school.

That will surely do a lot. Yes, when I initially read Sux's email I thought of the hours of sleep I'd lost planning the fake. I thought of the great efforts of my classmates, too, I thought of the thrill we hoped to provide underclassmen. I was upset. (You succeeded! yayyy?) Then I realized your immaturity matters little. Yes, "Ditch Day Sux" it disappoints me that your misguided and ineffectual. I also know that those who know your identity are technical hubris to turn you in for continual violations of the honor code. I won't press that last point, however.

Some social circles circle spend many hours discussing the likelihood that Ditch Day will be Wednesday or Friday or Tuesday or Thursday, sometimes based on histograms with 30+ years worth of data. They should seem just as silly now.

Some consensus by Mike Malako Medved III

If a congressman were to...declare that he wanted to subsidize...high school prom, he would...be laughed off. It should seem just as silly now.

Funding, body there a success. We do not even necessarily need to have a formal. Yes, a formal is fun. If enough students want one, then of course there should be one.

There are always consequences to your actions, and that's about all I'll say about that. Please don't lessen the fun for Ditch Day for the seniors that have spent a year planning their stack or for the underclassmen that look forward to that annual one-day break from reality.
When one imagines fervish controversy over classical music, it’s almost too tempting to picture Beethoven caught “in flagrante delicto” with one of his students, a subfusc, full of a suspiciously both powdery and a low portrait on hand. While these allegations remain unproven, controversies do surround any distinguished gentleman’s toupee is set askew in vociferous argument, normally about the merits of authentic performance. It was my supreme pleasure to attend the concert he has come to perform here.

Cameron Carpenter, already famed amongst organ enthusiasts despite a career of less than five years, has built a solid audience and following for his style of performance, through both technical accomplishment as well as the challenging French romantic organ repertoire I’ve ever heard.更何况, the playing of a pipe organ, one knows the majesty of god, and in the silencing of a pipe organ, one knows the mercy of god. There was, however, quite a buzz amongst the few thousand people who had survived the first half, and in due course we all filed back in and took our seats.

Cameron walked back out on stage to gasps, mainly from middle-aged ladies in the front row, as he had changed into black sequined tights, a black mesh shirt and white glittery organ shoes. He took a seat at the console and promptly began the second half by playing the Brahms Toccata and Fugue in F-sharp major. It’s almost too tempting to picture Bach can write, reinterpreted and revealed through the new medium of the pipe organ.

All too soon Cameron began his final piece: a transcription of the finale of Mahler’s fifth symphony. Though he wrote it at 15 he has been unable to play it in any sensible way until quite recently due to the extreme technical difficulty of channeling Mahler’s monumental writing for more than a hundred instruments through just ten fingers and two feet. Like the rest of the program, he played from memory, once again revealing a fusion of solid musical understanding and a slight tendency to iconoclasm.

Noticably, it neither saturated nor fell into a pitfall of transcription, but rather rolled steadily and inexorably from one musical episode to the next. In a state of shock and surprise we, as one, relaxed into our seats. Cameron walked back out into the dimly lit Walt Disney concert hall, both ponderous and chatty with complete strangers.

Having warmed up the organ, Cameron took five curtain calls and played one encore, prompting giggles from the audience. Cameron is an impressive spectacle.

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Today’s Puzzle: Crossword

Across
1. Jeer
6. Part of a circle
9. Stop
13. Coconut meat
14. Exclude
15. Court panelist
16. Help
17. Occlus
18. Herb with aromatic seeds
19. Associated
21. Prescribe
23. Appearing bloodshot
24. Traditional music
25. First woman
26. Travel by horse
30. Scaling device
35. Hobble
37. Layer of paint
39. Appeared with Bogart in The Maltese Falcon, Peter ___
46. Reign
47. Misplace
48. Plaid design
50. Genuine
52. Church bench
53. Gown
55. Bend
57. Environmental condition
61. Consign
65. Automaton
66. Epoch
68. The Little Bear, Ursa
69. Develop
70. Pelt
71. Excessive
72. Outdo
73. Hankering
74. Wading bird
75. First woman
76. Travel by horse
77. Travel by horse
78. Scaling device
79. Scaling device
80. Scaling device
81. Scaling device
82. Scaling device
83. Scaling device
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104. Scaling device
105. Scaling device
106. Scaling device
107. Scaling device
108. Scaling device
109. Scaling device
110. Scaling device
111. Scaling device
112. Scaling device

Across
1. Indication of previous damage
2. Inlet
3. Gemstone
4. Mendicant
5. Waver
6. Not up and about
7. Beam
8. System of beliefs
9. Search and pursue
10. Melody for solo voice
11. Dissociated
12. Large plant
13. Canine mammal
14. Decree
15. Unwell
16. Characteristic
17. Choose
18. House
19. Glowing fragment of coal
20. Threshold
21. Child’s playing
22. Wilt
23. Delete
24. Regenerate
25. Saucy
26. Story
27. Acquire knowledge
28. Martial art
29. Negation of a word
30. Acid or alkali
31. Burly
32. Produced from a photographic negative
33. Crustacean
34. Traditional knowledge
35. Long-billed bird
36. The greatest number
37. Acquire by effort or action
38. Release a fastening
39. Journey
40. Regret

Down
1. European river
2. Inlet
3. Gemstone
4. Mendicant
5. Waver
6. Not up and about
7. Beam
8. System of beliefs
9. Search and pursue
10. Melody for solo voice
11. Dissociated

Answers: Last week’s sudoku from puzzlechoice.com

ASCIT Elections

Signups for Off-Campus BoC Rep and Senior Class Co-Presidents are open until Friday at 5PM. Elections for the position will be held on Monday May 22nd from 10AM until Midnight.

The elections will be held using the instant runoff procedure. Questions should be directed to reviewchair@donut.caltech.edu.

Off-Campus BoC Rep

This position is open to anyone who wants it. This is a normal BoC Rep position. Only people who didn’t vote in their house elections or who aren’t house affiliated may vote.

Senior Class Co-Presidents

This position is open any students who are graduating at the end of next year. This position is run for as pairs. Responsibilities include planning Ditch Day and finding a graduation speaker. Questions should be sent to the current Co-Presidents Perrin Considine perrin@caltech.edu and Paul Fleiner pfleiner@caltech.edu.

Only students graduating at the end of next year are eligible to vote.
**Caltech Athletics gets former Olympian**

PASadena, Calif. — Betsy Mitchell has been appointed director of athletics, recreation and physical education at the California Institute of Technology (Caltech), effective July 2011. The former Olympic gold medalist and world record holder becomes Caltech’s first full-time female director of athletics and recreation.

Mitchell permanently takes on the role that Julie Levesque has served at the on an interim basis since June 2010. Prior to this appointment, Mitchell served as the director of athletics and recreation at Allegheny College in Pennsylvania from 2006 through March 2011.

Mitchell has also worked as the swimming and diving head coach at Dartmouth College in New Hampshire, instructor in the sports management program at Notre Dame College of Ohio, and director of athletics at Laurel School for Girls in Shaker Heights, Ohio as well as director of athletics at Thomas Worthington High School in Columbus, Ohio.

Mitchell has worked on several higher education leadership committees. She currently serves on the NCAA Division III swimming and diving rules committee and participates on the programming and education committee for the National Association of Collegiate Woman Athletic Administrators. While at Allegheny College she co-chaired the athletic directors group for the North Coast Athletic Conference. “I am honored by and thrilled for the opportunity to serve the students and community of Caltech through education graduation requirement as well as intercollegiate athletic competition. Our objective will be to support a variety of members of the Caltech community in engaging their bodies in healthy ways that support their overall pursuit of personal educational excellence.”

Mitchell was a competitive swimmer for over 18 years, earning an Olympic silver medal as a high school athlete by placing second in the 100-meter backstroke, and also won a gold medal as a member of the 400-meter medley relay in the 1984 Olympics in Los Angeles. She earned another Olympic medal after helping the 400-meter medley relay team to a silver medal at the 1986 Olympics in Seoul, South Korea. In between Olympic berths, she set the world record in the 200-meter backstroke at the 1986 World Championships. That record stood for five years. She has been honored with several awards, including being named USA Swimmer of the Year in 1986.

She was also a finalist for the Sullivan Award, which honors the top amateur athlete in the country, and was voted the U.S. Olympic Committee Sportswoman of the Year for swimming. In 1999 she was inducted into the international swimming hall of fame. Mitchell helped the University of Texas to three consecutive Division I Championships in 1986, 1987, and 1988.

She was a seven-time individual NCAA Champion in the 100- and 200-yard backstrokes and the 200-yard individual medley, holding the American record for both backstroke events for many years and the world record in the 100-yard event. Named All-American and Academic All-American many times, she also earned the NCAA Most Valuable Swimmer Award, the NCAA Top Six Award, and the Honda Award for Swimming. After completing her swimming career she represented the United States in the World Sculling Championships in 1994. Three years later she successfully summited Mount Kilimanjaro. Mitchell earned her BS in education from the University of Texas in 1988. She completed her masters of education degree in sports administration in 1991 and went on to earn a certificate of advanced study in education administration, planning, and social policy from Harvard’s Graduate School of Education in 1997.

Three heptathletes make Tech top-ten list

CLAREMONT, Calif. — During their final competition of the 2011 season, three Caltech track and field athletes competed at that 2011 Claremont Classic Heptathlon. Sarah Wright was the top finisher for the Beavers by scoring 3600 points in the seven-event competition.

Her top mark came during the long jump when the sophomore jumped a personal best 15’ 1 1/2” which placed her sixth all-time in school history. Wright also set a personal best mark in the high jump as she cleared the bar at 4’ 9” which is also the sixth best mark in Caltech history. Mia Ovissi finished second among the Beaver competitors with 2961. Her point total is the fourth best mark for a Beaver heptathlete. She moved into the school’s all-time list in two events.

The native of San Antonio, Texas ran the 200 meter dash in 28.10 to place eighth all-time.

During the 100 meter hurdles competition the sophomore posted a time of 19.61 to moved into ninth on the school all-time list in that event.

In her last competition as a Caltech athlete Deboki Chakravarti scored 2449 points. During the high jump she cleared the bar at 4’ 3 1/4” which tied her for the 10th all-time spot at Caltech.

Also competing as an unattached athlete was assistant coach Tim DePrez. She tallied 3245 points.
Humor

Pokemon the Animated Series

By Tim Snape

The Joke Tree

By Gus Stattloe

The California Tech

By Chau Dang