



# THE REACTOR

OREGON STATE UNIVERSITY CHEMICAL, BIOLOGICAL, AND ENVIRONMENTAL ENGINEERING STUDENT ORGANIZATION



**Welcome back!**

Hello Everyone,

There are a lot of great things to look forward to this year as part of the CBEE student club. Once again our chemical car team will be competing for national recognition, and for the first time in a few years a fellow member will be competing in the paper competition at the AIChE national conference in Nashville, TN. Besides the exciting conferences we attend there are many opportunities to get involved on campus, in the college of engineering, and in the community as a part of the CBEE club.

All three of us have just returned from internships where valuable information about engineering in industry was learned. One thing that most students don't get is industry knowledge. With our newly acquired knowledge and contacts within the industry our club can start gearing more students toward their careers after college.

As we do every year, we will be committed to providing opportunities to hear about internships, advancing members' professional skills, helping students learn about their chosen major and "what's hot" in their field, and creating a great environment to meet people and make some life long friends.

We look forward to an awesome year and we hope to see you at our club meetings and events! Go CBEE and Go Beavs!

Your CBEE Presidents,

*Ryan Stillwell, Maddie Midgett, and Jeff Hart*

## In this issue:

Spring 2009 Wrap-Up	2
Relay for Life	2
Brewery Tour	2
End-of-year BBQ	2
Graduation	2
2009-2010 CBEE Officers	2
Headed to Nashville, TN	3
Shirt Design Contest	3
Football Parking Fundraiser	3
Gleeson Lounge	3
We're Online	4
Sign up for AIChE & CBEE	4
Get Involved	4

## Trivia Night and Meetings

CBEE welcomes students to its first general meeting of the term with a club introduction and a trivia night. Learn about and sign up for the CBEE club, and test your team's knowledge of fun engineering trivia! The meeting will be **Thursday, Oct. 8th at 6:00 p.m. in Gleeson 100, and pizza will be provided.** Future general meetings will be held every other Thursday at 6 p.m. Check the calendar by the lobby stairs for other club-sponsored events.

## Ice Cream Social

Celebrate the beginning of the year at the annual CBEE Ice Cream Social. Watch us make ice cream with liquid nitrogen...and then eat it with all your favorite toppings! Meet your fellow students too. Don't miss out!

**Thursday, October 1st from 4:00-6:00 pm in the new Gleeson Lounge.**



## Spring 2009 Wrap-Up

### Relay for Life

For the second year in a row, the club participated in the OSU Relay for Life, raising money for the American Cancer Society and attending the all-night event in the MU quad. To make things interesting, the CBEE student team competed with the CBEE professors' team. Although the students walked more laps than the professors, the professors whipped the students on fundraising. The professors won the competition and the right to pie some lucky students in the face.

The pieing occurred on a sunny afternoon in May, to the joy of many spectators. However, students did have a chance to return the favor—they could pay \$5.00 to smother their favorite professors' faces in whipped cream.



### Brewery Tour

On May 20<sup>th</sup>, 2009, approximately 15 CBEE students traveled across campus to Wiegand Hall, home of the OSU Brewery. Their mission was to understand the basic concepts of brewing beer. Their guide was Jeff Clawson, who explained the many steps of the brewing process.

First, he showed them different grains and hops. Each has a different appearance and flavor, and when brewing, you can choose any combination of grains and hops to achieve your preferred taste. The rest of the process includes: Heating up the grain so enzymes can breakdown the grain into simpler sugars, boiling the grain while adding the hops, using a whirlpool machine to separate the solids (grains and hops) from the liquid, adding yeast to start the fermentation process, and after a period of time the final product is the beer.

There is also a lot of waste associated with the process including spent hops and grains, CO<sub>2</sub>, and the beer—the OSU Brewery isn't allowed to sell the beer so they dump most of it down the drain. With the equipment, chemical reactions, biological processes, waste, and of course the final product, brewing is an area of interest to CBEE students.

### End-of-the-Year Barbeque

The CBEE club hosted its annual End-of-Year barbeque in June at Avery Park. The barbeque celebrated the culmination of a successful year for CBEE as well as the accomplishments of the graduating seniors. Food and drinks were provided and people enjoyed playing in the traditional student vs. professors softball game.



### Graduation

Congratulations to the students who graduated last spring, including some dedicated long-time members of CBEE! The undergraduate class of 2009 included:

- ◇ 47 chemical engineering students
- ◇ 19 bioengineering students
- ◇ 8 environmental engineering students

## 2009-2010 CBEE Elected Officers

*ChE President*—Ryan Stillwell

*BioE President*—Maddie Midgett

*EnvE President*—Jeff Hart

*ChE VP*—Ian Gluck

*BioE VP*—Andy Sinclair

*EnvE VP*—Mikkel Leslie

*Secretary*—Lauren Jansen

*Treasurer*—Julie Auxier

*Fundraising Coordinator*—Tara Binn

*Business Manager*—Keri Robinson

*Publications Editor*—Michelle Adlong

*Website Monitor*—Timothy Phan

*Social Coordinator*—Lillie Mansfield

*K-12 Outreach Coordinator*—Joe

Anderson

*Senior EnvE Class Rep*—Katie Bruce

*Junior ChE Class Rep*—Sara Varin

*Junior BioE Class Rep*—Kyle Robinson

*Soph. ChE Class Rep*—Devon Frazier

*Soph. BioE Class Rep*—Ishan Patel

*Soph. EnvE Class Rep*—Justin Chi

*Freshman Reps*—Open

*Faculty Advisors:* Dr. Skip Rochefort, Dr. Adam Higgins, and Dr. Jeff Nason

## We're Heading to Nashville!

On November 6th-9th, a group of CBEE members will attend the annual American Institute of Chemical Engineers (AIChE) National Student Conference in Nashville, Tennessee. Students will attend career info sessions, host leadership and outreach workshops, and meet fellow AIChE students and professionals. After placing first at the AIChE regional conference last spring, Maddie Midgett will compete in the research paper competition. A team of CBEE students may also compete in the ChemE car competition, a traditional conference highlight. A limited number of spots to attend are still open; contact Ryan Stillwell at [stillwer@engr.orst.edu](mailto:stillwer@engr.orst.edu) before Oct. 9th if interested.



### CBEE Shirt Design Contest

It is time to order 2009-2010 CBEE shirts, but they need to be designed by you first! We typically print a front and back, and look for designs that are clean, legible, and related to chemical, biological, and environmental engineering. Any CBEE student, whether or not a club member, is welcome to participate.

Submissions should be sent in electronic format (such as PDF or JPG) to Tara Binn at [binnt@onid.orst.edu](mailto:binnt@onid.orst.edu) by Thursday, Oct. 15th, 2009. Keep posted for more details, including how to order shirts once the design is chosen.

### Football Parking Fundraiser

Our club works hard to fundraise so that we may host relevant programs and send students to conferences. This fall, we will act as parking monitors at Beavers home football games. The club is currently looking for volunteers to work on the remaining game-day Saturdays:

- Oct. 10th, 2009
- Oct. 31st, 2009
- Nov. 14th, 2009

The club earns an hourly sum for each person who works, and volunteers receive a free ticket to the game that day. If you would like to volunteer, please contact Ryan Stillwell. Keep posted for other club fundraisers as well!

### Why Engineers Don't Write Cookbooks

#### Chocolate Chip Cookies

##### Ingredients:

- 1) 532.4 cm<sup>3</sup> gluten
- 2) 4.9 cm<sup>3</sup> NaHCO<sub>3</sub>
- 3) 4.9 cm<sup>3</sup> refined halite
- 4) 236.6 cm<sup>3</sup> partially hydrogenated tallow triglyceride
- 5) 355.0 cm<sup>3</sup> crystalline C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>
- 6) 2 CaCO<sub>3</sub>-encapsulated avian albumen-coated protein
- 7) 473.2 cm<sup>3</sup> theobroma cacao
- 8) 236.6 cm<sup>3</sup> de-encapsulated legume meats (sieve size #10)

To a 2-L insulated reactor vessel (reactor #1) with an overall heat transfer coefficient of 100 Btu/°F·ft<sup>2</sup>·hr, add first three ingredients with constant agitation. In a second 2-L reactor vessel with a 100 rpm radial flow impeller, add ingredients four and five until mixture is homogenous.

To reactor #2, add ingredient six, followed by three equal volumes of the homogenous mixture in reactor #1. Additionally, add ingredient seven and eight slowly, with constant agitation. Care must be taken to control any temperature rise that may be the result of an exothermic reaction.

Using a screw extruder attached to a #4 nodulizer, place the mixture piece-meal on a 316SS sheet (300 x 600 mm). Heat in a 460 K oven for a period of time that is in agreement with Frank & Johnston's first order rate expression (see JACOS, 21, 55), or until golden brown.

Once the reaction is complete, place the sheet on a 398 K heat-transfer table until product reaches thermal equilibrium.

*-University of Bristol Civil Engineering*

## Gleeson Lounge Gets a Facelift

Two years ago the east side of the Gleeson student lounge was condemned by the fire department. Up went the chain link fence, and out went the nice study area that had hosted so many homework all-nighters.

The CBEE club wants to make the lounge a comfortable place to study again. This summer, it worked with Ann Kimerling and a team of student painters to improve the lounge, starting with a fresh coat of paint. The formerly yellow walls are now tan and deep blue like the beach, and even the concrete floor has been painted. The chain link fence is partially masked and more white boards and bulletin boards have been installed for student use.

The lounge has been rearranged to make the most of the space. Study tables greet students at the entrance, and in the back are couches and chairs for relaxation. Other changes include the addition of a bookshelf. The CBEE store is still in the lounge. It is full of delicious, low-priced snacks for the starving studier.

The lounge is located on the main floor of Gleeson, through the double doors from the lobby. Another lounge available for student use is on the main floor of Merryfield Hall. We encourage all students to use and care for the lounges.



### We're Online

Check out our website at:  
<http://groups.engr.oregonstate.edu/AICHE/>

Also, become a Facebook fan of  
"OSU CBEE Student Chapter"  
for the latest updates!

### Sign up for AIChE



The CBEE student club is professionally affiliated with the American Institute of Chemical Engineers (AIChE). AIChE offers many benefits to students, including access to the Knovel library, ability to attend conferences and webinars, and other career-related benefits. Membership for students is FREE. Sign up (or renew your yearly membership) at <http://www.iche.org/Students/Join/index.aspx>.

### Sign up for CBEE

For a yearly dues of \$10.00 or \$20.00 if renting a locker, you can become an official member of the local chapter.

### Get Involved!

Aside from the CBEE student organization, there are several other engineering-related student organizations that are welcoming new members of all experience levels to participate in engineering projects, volunteer opportunities, and fundraising efforts. A few of interest to CBEE students:

#### **Sustainable Energy Initiative (SEI):**

Meetings: Every Tuesday at 6 pm in  
KEC 1003.

Website: <http://sei.oregonstate.edu/>

#### **Engineers Without Borders (EWB):**

Meetings: Thursday Oct. 8th at 7 pm  
in KEC 1003, then alternating  
Wednesdays and Thursdays at 7 pm.

Website: <http://www.ewb-osu.org/>

#### **Society of Women Engineers (SWE):**

Meetings: Tuesday Oct. 6th at 6 pm in  
KEC 1003, then every other Wednesday  
at 6 pm starting Oct. 21st.

Website: <http://oregonstate.edu/groups/swe/>