OXE Newsletter

December 2017

OXE Events to Look Forward to Next Semester:

Alumni panel/workshop focused on transition into industry

Peer mentoring session

Banquet

And more!!!

Happy holidays to all ChemE students, faculty, and staff. From the entire OXE Executive Board, we hope you enjoy your winters and have a relaxing time with your loved ones. Please enjoy our end-of-semester newsletter before shutting down your computers to take a well-deserved break!

Interview with Weilee Wu, President of OXE

By Annika Vaerst

Q: You are currently the President of OXE. What made you join OXE and what led you to becoming president?

A: I thought that joining an honors society sounded cool. The idea of seeing older seniors tutoring younger ones and having people to look up as a young student to appealed to me, along with gaining connections to older students that can pass down their wisdom and experience. I've always really enjoyed community service. In the past, I've enjoyed tutoring young kids and I've coached basketball. Joining OXE was a no brainer.

In OXE, I started as Secretary and I thought being on the Executive Board was cool. I liked managing people, so I decided to become President this year. I wanted to continue on with the previous president's ideas and legacy.

Q: How has your involvement in OXE grown you as a professional and as a leader?

A: It taught me that getting an organization running requires a lot of people. Everybody's input is important. I've seen that a member of an organization doesn't have to be President to have an impact. The title is irrelevant, it's what you do in the organization that matters.

Q: What is the mission of OXE and how does our chapter accomplish this mission?

A: We are a professional organization that looks after the department. We help with student-faculty relations. Our bread-and-butter are the tutoring sessions, which many students use on a regular basis.

Q: Under your leadership this last semester, what have been OXE's successes?

A: Organizing the graduate school panel and having current grad students come and talk about their experiences was a really useful event. Being able to continue finding students to lead tutoring sessions is always a tremendous success since our tutoring sessions are so heavily utilized. The scheduling event we held this semester worked out really well. Students came asking questions about what classes to take the next semester, but left asking much broader questions. It was a great bonding experience between older and younger students.

Q: Are there any exciting sneak peaks for the next semester's activities?

A: We'll be hosting an alumni/industry workshop where we'll be having alumni come in and asking them questions on how to get that first job. We'll also be trying to do another peer-mentoring session, similar to the one we did on scheduling classes this previous semester. As always, the banquet will be next semester and hopefully we can do Chipotle catering and an open bar at the event.

How to Impress Your Crush: Chemical Engineering Edition, Part Two

By Sina Ataei

I didn't think it would have to come to this, but I can't say I'm not surprised either. I mean let's be honest, the only chemistry you know is the reactions you learned in Orgo, but I won't hold that against you. After all, you didn't major in chemical engineering to impress your crush, you mostly did it to impress your family and friends. Once again, I am here to save the day and help you actually impress your crush this time. Not with cheesy pickup lines, but with super cool science tricks. So, without further ado, we are going to get right into it.

Cool Trick 1: Making a rocket

You will need the following to perform this trick: a bottle (glass is preferred), a toothpick, a straw, and any sort of flammable liquid (such as ethanol). You start by coating the inner walls of your glass with the flammable liquid. Then, you cut your straw in half and insert the toothpick through the straw to make a cross. Now here is the fun part: light a match on fire, and drop the match into the bottle. Because the bottle is coated with a flammable liquid, the match will create a mini-explosion which will shoot the straw out of the bottle at incredibly turbulent speed. It will look like a rocket taking off, just like your chances with your crush. This will impress your crush without a doubt, but there is a slight chance they will not be impressed if they major in aerospace engineering. Thus, if you are stuck in such an unfortunate position, move on to the second trick.

Cool Trick 2: Reverse spill

You will need the following to perform this trick: a plate with some water on it, a glass cup, and a candle. You will start by putting the plate with water on a table. Then, place the candle on the water, and carefully light the candle (setting the mood for you and your crush). Then, place the cup over the candle, making sure the candle is fully sealed. Before you know it, the candle will go out due to a lack of oxygen, and as a result of this, all of the water on the plate will be sucked up into the glass. Unlike the candle, the heat between you and your crush has just ignited.

By now, you have hopefully either impressed your crush, or proven to her/him how much of a nerd you are. Either way, you have done all you could do, and the single most important thing to remember throughout this whole process is: there are still plenty of other fish in the sea.

How to Land an Internship or Co-op

By Austin Hughes

Gaining experience in the chemical engineering industry via an internship or co-op is arguably just as important as one's academic endeavors when it comes to landing a great job post-graduation. Most employers prefer to hire students who already have real-world work experience, and most companies that offer internships and co-ops extend full-time job offers to students who worked for them during their years in college. However, chemical engineering is an extremely competitive field, and it can be very difficult to secure these valuable internship positions. This guide will provide advice for securing internships and co-ops.

First and foremost, make sure your resume is as strong as possible. When employers screen applications, they are looking for applicants with resumes that stand out to contact for a potential interview. You can strengthen your resume by getting involved in student organizations (like OXE, AIChE, and ChemE Car) and taking on leadership roles on campus. One example of a leadership role that is very easy to get involved in is tutoring. In addition to leadership roles, another great opportunity to strengthen your resume is doing research. When asked for his advice about obtaining internships, Dr. Raghavan stressed how valuable research experience is. On top of making your resume stand out, Dr. Raghavan also noted that having research experience gives you something impressive to talk about with recruiters at the career fair and during interviews. Many professors in CHBE and other disciplines hire undergraduate students in research positions. Finally, visit the Engineering Co-op and Career Services (ECCS) office to get your resume critiqued!

Now that your resume is sparkling, the next step is to network with employers at career fairs. UMD offers large career fairs during the Fall and Spring semesters, as well as a smaller fair for ChemE employers. Attending the career fairs allows you to talk with recruiters and demonstrate why you are qualified for a particular job. Employers are far more likely to interview a student that spoke with a recruiter at the career fair compared to a student who simply submitted an online application. Make sure you follow up afterwards with emails to the recruiters.

Even if you are a freshman or sophomore that may not be looking for an internship right now, it's still a good idea to attend the career fair. Deborah Vidmar from the ECCS office says that her best piece of advice when it comes to getting internships is to start as early as possible. By attending the career fair as a freshman or sophomore, you can begin to get your name out there to companies so that they know you once you decide to start applying for internship positions.

After meeting and speaking with employers, it's time to apply. There are two important steps when it comes to applications: apply to as many jobs as possible and apply to some smaller companies, because positions with large, well-known companies are typically a lot harder to obtain. Follow the rule of five for applications: on average, employers select about one in five applicants to contact for an interview. The more applications you submit, the better your chances.

If you follow the instructions laid out in this guide, you will be well on your way to securing your dream internship or co-op. Keep in mind that the ECCS office offers plenty of resources for helping students find internships, and you can always talk to other ChemE's about their internship and co-op experiences to learn more.

Best Holiday Gifts for a Chemical Engineering Student

By Katherine Sniezek

It's that time of year again! Parties, baking, shopping, presents galore! As you're scrambling to get everything prepared for the holiday season, you may have discovered you really have *no idea* what gift to give the Chemical Engineer in your life. Well, you've come to the right place! Be it for your friend, significant other, or relative, these gifts are guaranteed to make this the best holiday season for a Chemical Engineer.

5. The gift of time-to sleep!

Not all gifts need to be wrapped! After a long semester of staying up to the early hours of the morning to finish that last MATLAB assignment or studying for an 8AM Thermo exam, nothing will bring a Chemical Engineering student more joy than a nice long nap. Though it may not seem like much, allowing your Chemical Engineering friend time to sleep will perhaps be the most practical gift you could offer this holiday season.

4. The gift of time-doing anything <u>but</u> homework.

With a semester so jam-packed with classes and studying in an effort to fit 125 credits into 4-years, any Chemical Engineering student is in need of some personal, human interaction to put them into the holiday spirit. Be it going to see a movie, shopping, or just hanging out, giving them a gift of quality time with others will be just the kind of stress-relief they need during the winter break!

3. *Anything nerdy related to chemistry.*

Take it from a Chemical Engineering student herself- nothing would be more exciting than unwrapping a present to find that color-changing coffee mug[1] they have always wanted. A Periodic Table bow tie[2] for him, dopamine earrings[3] for her, or Yellow Bug Boutique's Chemistry Procrastination Pillow[4] are just a few examples of Chemistry-related gifts that will put a smile on their face!

2. Anything to remind them of how much they ~~hate~~ love Chemical Engineering.

Though you may not realize it (because they *never* complain about their major), being a Chemical Engineering student often results in confusion, frustration, and the occasional loathing. Gifting any humorous Chemical Engineering apparel, like Spreadshirt's sarcastic "Being a Chemical Engineer is Easy…" t-shirt, will make any Chemical Engineering student feel like you really *get* them.

1. Anything to shows how totally awesome they are for being an (aspiring) Chemical Engineer.

[1] This "Magic Mug" by Cortunex can be found on Amazon.com!
[2] One colorful option available by CP Lab Safety at www.calpaclab.com/geek-chic-swag/
[3] Find these and other molecule-related jewelry at molecularmotifs.etsy.com!
[4] This and similar designs can be found at yellowbugboutique.etsy.com!

After all the torture they've put themselves through, Chemical Engineering students have earned the bragging rights to express how amazing they truly are. That makes artRuss's "Freakin Awesome" job title mug[5] the perfect present! A sweatshirt or other apparel with similar graphics can be found almost anywhere, so you can never go wrong giving your Chemical Engineering friend some props this holiday season!

So, there you have it! Follow these 5 suggestions, and you are guaranteed to make any Chemical Engineering student's holiday the best yet. Now that you have that under control, relax, eat a cookie, drink some eggnog, and have a happy holiday!

[5] Reading, "Chemical Engineer: Because freakin' awesome is not an official job title", artRuss's mug (and many others) can be found on etsy.com!

Interview with Dr. Kofinas, Department Chair

Hannah Cetuk sat down with Dr. Peter Kofinas to ask him about his career, his life, and his position as the current Department Chair.

Dr. Kofinas was born in Switzerland and, like many of us, Dr. Kofinas enjoyed math and chemistry growing up, which strongly influenced his choice to study chemical engineering. His parents wanted him to be a doctor, but he felt like chemical engineering would be a better fit. He came to America when he was 18 for college. He attended MIT as an undergraduate, where he almost immediately began doing polymer research. At MIT, he obtained his bachelor's and master's degrees in chemical engineering and remained there to obtain a PhD in their Program of Polymer Science and Technology.

While in school, Dr. Kofinas was able to get industry experience working at multiple companies including Bayer. Despite having a job offer after graduation, he decided to pursue a faculty position, saying that he could see himself getting bored not being able to do his own research. He accepted a faculty position here at UMD in 1996, and has been working here ever since. Dr. Kofinas currently works in the Functional Macromolecular Laboratory, researching polymer application over a wide range of fields.

Before his position as chair of the chemical engineering department, Dr. Kofinas was the Clark School's associate Dean for Faculty Affairs and Graduate Programs. He brought this administrative experience with him to the Chemical Engineering department at the beginning of this academic year. As Chair, he is responsible for overseeing things like hiring and facility improvements. He works directly with students and faculty to use their feedback to improve the Chemical Engineering program. He had his hands full this semester making sure that our department remained ABET accredited. In addition to all of this, he is still teaching classes and will be offering CHBE457 next semester. In his free time, he's gotten involved in UMD's Calisthenics Club with fellow chemical engineers.

When asked about the hardest part about studying chemical engineering, Dr. Kofinas stated that chemical engineering is hard because it is a rigorous and math intensive field - his advice is that students should learn to like math for this major. He says the difficulty of chemical engineering pays off in the end, since this major is more structured (compared to majors like bioengineering) and will give students a well-rounded engineering foundation for any chemical engineering specialization.

Dr. Kofinas is really excited to come up with ways to improve the chemical engineering department, and says that he has plans to improve the facilities and fundraise for better unit ops lab equipment. As Chair, he wants to be involved in undergraduate education, and wants to hear what current students have to say about the department. If any students reading this have suggestions or input, feel free to reach out to Dr. Kofinas because he would love to hear from you! You can contact him via his email, kofinas@umd.edu, or by visiting his office in 2113D CHE.

Student Research Spotlight: Jackie Weaver

By Dat Huynh

Jackie Weaver, a junior in Chemical Engineering, has worked in Dr. Woehl's lab since October of last year. The research in Dr. Woehl's lab consists of studying nanoscale materials using optical and electron microscopy including areas such as colloidal assembly, protein aggregation and electrocatalysts. Jackie got involved in research because, "you get to be the first, the first person to see something or do something."

Her own project attempts to assemble colloids into low coordination lattices using temporarily asymmetric particle interactions. In layman terms, suspensions of colloidal particles can be manipulated into unique patterns using AC electric fields. The patterns or low coordination lattices have applications in thin film optics and the development of light based optical circuits due to their interesting optical properties.

The manipulation of colloidal suspensions through electric fields happens based on a mixture of two forces. Dipole-dipole interactions are repulsive and electrohydrodynamic flow are attractive. By changing the frequency of the AC electric field, the dominant interaction force is altered. Dipole-dipole interactions are dominant at low frequencies and electrohydrodynamic flow is dominant at high frequencies. In binary colloidal suspensions, conditions exist where dissimilar particles are attracted and similar particles repel. A combination of techniques allows Jackie to create different patterns such as chains of alternating particles or square lattices.

A typical experiment involves setting up a colloidal suspension between two clear electrodes under an optical microscope. Jackie records a video as she uses a waveform generator to create the lattices in the suspension. The most interesting thing she has learned from her research is that small perturbations in a colloidal sample can have large impacts on its behavior. For example, the behavior she studies occurs between 10uM and 100uM NaOH, dilute enough to consider basically water. However, the behavior is not observed in pure water.

Jackie says that working in Dr. Woehl's lab has been a lot of fun. Dr. Woehl's lab is new and having worked in his lab since almost the very beginning, Jackie has gained a lot of insight on the behind the scenes of starting up a lab. This has also given Jackie an opportunity to help make decisions that could influence how the lab operates years down the line. For the future, Jackie plans on pursuing a PhD and is leaning towards studying organic chemistry.

Professor Quotes

Hear something funny or inspiring in a classroom? Send your professor's quotes to oxe.umd@gmail.com *so they know at least someone is paying attention.*

"I'd be lying if I said I missed you." – Dr. Choi after Thanksgiving break

"Is someone distilling alcohol?" – Dr. Sriram (with very concerned expression)

"I've always wanted to be in the OXE newsletter." – Dr. Goldberg

Puzzles and Riddles

Place one line in the following equation to make it true:

5+5+5=550

There are two fathers and two sons. They walk into a candy store and each buy a candy bar for 50 cents. The total of the candy bars was $1.50. How is that possible?

6=12, 3=6, but 5 does not = 10, how come?

How can you take 1 away from 19 and the result would be 20?

Read the next newsletter to find the answers!