



In Conjunction with the American Chemical Society
Student Affiliates at the University of Pittsburgh



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October 6, 2017

SET DATES:

REGISTRATION

- October 27:** Monitored withdrawal (2181) deadline-140 Thackeray Hall
- October 30:** Registration begins for Spring Term 2184 based on earned credits. You will receive your registration appointment from the Registrar.
- October 30:** Add/drop begins for Spring Term 2184.
- October 31:** Happy Halloween!
- November 11:** April 2018 (2184) graduation applications due in 140 Thackeray Hall.
- November 23-
November 26:** Thanksgiving Recess. **NO CLASSES!!**
Have a great Holiday!



IMPORTANT: WHEN SHOULD YOU SEE YOUR ADVISOR?

Advisees who already have a permanent advisor should make their registration appointments with that advisor on or after October 16. Remember to bring a copy of your academic record with you to this meeting.

Advisees who (via an email to be sent October 02) were asked to select their permanent advisors should do so after October 06. See George Bandik or Regina Mahouski in 107 Chevron Science Center.

New advisees (those who have NOT registered with the Chemistry Department before) should make an appointment with George (Room 107 Chevron), Dr. Huston or Dr. Ward on or after October 14.

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Visit us at <http://www.chem.pitt.edu/acs-sa/>

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Our October Schedule

Everyone is welcome to attend our weekly ACS-SA meetings. Every Friday at noon we get together in 150 Chevron Science Center to hear interesting talks, learn more about science and enjoy each other's

October



- 6 Spring Term Birthday Celebration!!!
- 13 Preparation for National Chemistry Week 2017
"Chemistry Rocks"
- 20 Pumpkin Painting on the Patio!
- 27 Ryan McGlynn, Boron Specialties LLC



Halloween Pumpkin Fest

Come join the fun this October 20, 2017 as we drink apple cider and paint pumpkins on the patio in front of Chevron. Bring candles, dress up or do other Fall like things as the mood strikes you. BYOB (bring your own **blankets**...preferably flannel since we have a theme going and all). Come to a meeting or see George with suggestions or for more details. **Also if you have any other useful suggestions e-mail us at stl151@pitt.edu.**



Who's This BEN Guy, Anyway??!!

Benzoyl Peroxide the Free Radical Man (affectionately known as Ben) is our ACS-SA mascot. You have probably seen him around the chemistry department and on our yearly ACS-SA T-shirt. From now on when you see Ben, think of the ACS-SA. Why not come to a meeting to learn more about what we are all about. Fridays at Noon in 150 CHVRN.

SOME COURSES JUST FOR YOU...

If you are looking for something new and different this term, why not try one of the following courses being offered this coming Spring Term (2184).

CHEM 1000

Mathematics for Chemists

THIS NEW COURSE OFFERED THROUGH THE CHEMISTRY DEPARTMENT IS RECOMMENDED IN PLACE OF MATH 240-CALCULUS 3. IT WILL BE OFFERED BOTH FALL AND SPRING TERMS. PLEASE NOTE THAT IF YOU CANNOT FIT CHEM 1000 INTO YOUR SCHEDULE YOU MAY TAKE MATH 240. IF YOU HAVE ALREADY TAKEN MATH 240 YOU HAVE MET THE MATH REQUIREMENT FOR THE MAJOR.

Mathematical methods, in particular linear algebra and differential equations, are important in many areas of chemistry. This course provides a background in those and other mathematical methods that will be used in subsequent Physical Chemistry courses. The course will begin with a brief look at topics currently covered in Math 240-Calculus 3 that are important for chemists. It will then move on to linear algebra and look at topics such as systems of linear equations, matrices, determinants, eigenvalue problems and basis sets. The course will finish with a look at important types of differential equations (DEs), including first order DEs, linear systems of DEs, higher order DEs. The material covered in this course will better prepare our majors for their advanced work in physical chemistry.

CHEM 1600

The Synthesis and Characterization of Polymers

What makes really long molecules behave differently from short ones? How can it be that everything from your socks to your laptop is made from polymers? What changes must you make in a polymer to go from making bullet-proof vests to making teddy bear fur? Did you know that every time you paint a wall or use super-glue you are do-



ing polymer chemistry? In this course you will get an overview of all aspects of polymer science including synthesis (you need 99.9% yields to make polymers!); purification (you can't, so you have to make them right the first time); characterization (how can you figure out if your polymer weighs 10,000 or 1,000,000 g/mol?), thermal properties (you need to know that your plastic flip flops won't melt on hot pavement) and mechanical properties (elastic polymers make skinny jeans; rigid ones make motorcycle helmets—you don't want to mix them up!). Bonus: When you make a polymer in lab, you get to play with it!

A Few Important Reminders:

Chem 1140-Preparative Inorganic Chemistry is our advanced inorganic laboratory course offered each Spring Term. **Chem 1130**-Inorganic Chemistry is a pre or co-requisite for this course. If you are working towards an ACS-Certified degree, this course is a degree requirement.

If you have wondered about what goes on the upper floors of our building you might want to consider registering for **Chem 1700**. This one credit seminar course allows two different faculty members each week to speak on their own research interests. Over 80% of our graduating seniors in Chemistry participate in our undergraduate research program and this course is a great way to learn more about your options and your department.

Finally, if you are interested in pursuing an honors degree in Chemistry the requirements students must have are:

- (a) an overall QPA of 3.00 or better
- (b) a chemistry QPA of 3.25 or better
- (c) have completed at least 2 credits of Chem 1710-Undergraduate Research
- (d) completed Chem 1711-Undergraduate Research Writing.

Good luck as you strive towards academic excellence!

TIPS AND TRICKS FOR SURVIVING CHEVRON: A SHORT GUIDE

by: Stephanie Liu, *Newsletter Editor*

Hello again! We're already a quarter of the way into the semester, and midterms have descended upon us. To those of you who are doing this for the first time, I wish you the best of luck! In an effort to help you on your journey, I've collected some tidbits of advice from my fellow seniors that have made it through these four years in one piece, that will hopefully help you make the most of your time here in Chevron and here at Pitt. Without further ado, here is a short guide on college chemistry survival 101:

Brock Nelson, a senior chemistry major, biological sciences track, says to, "Study! If you didn't study in high school, make sure to study in college. Learn how to study." He also adds, "Don't be afraid to go talk to professors and go to office hours." The professors are here to help you! It may seem daunting to go interact with them one on one, but that extra time will really help you clarify any concepts taught in class, or even get more insight into what the exam will be like.

Grace Rong, also a chemistry major on the bio track, who is planning on going to pharmacy school, simply says, "Do your homework. And don't procrastinate." (Wow Grace, @ me next time.)

Adam Leventry, a chemistry, bio track, and psychology double major says, "Don't be shy. Make friends with your peers, your classmates, your professors. You never know when a connection will be able to help you out." Some of the best resources aren't official ones. Although ACS tutoring and grad TAs are super helpful, having a study group full of people in the same position you are can be a life saver. Misery loves company, after all.

Molly Gallagher, a chemistry, bio track major on the pre-med track, says "I would just say, ask for help when you need it, because the chem department is very warm and friendly, and always willing to aid you if you need any assistance." For pre-med students taking chemistry classes specifically, she says "Clarify concepts you're not familiar with right away. A lot of chemistry builds upon itself, so I would say if you're already confused on something, start small and then work your way up."

David Pilsk, who is a chemistry major on the education track, with a certificate in sign language, wisely says, "Don't pursue a future you don't necessarily want. Also, India on Wheels is your best friend."

Finally, my dear friend Andrew Warburton, says "Don't be a chem major. Please don't quote me on that."

I hope this has helped you, whether it is a little bit, or a lot. If you get to know any upperclassmen, don't be afraid to ask them for advice. We have all been in your shoes pretty recently. Most of us still are in the same boat as you guys. It seems to me, in general, that the most important thing to keep in mind is that you



Looking for something different to have for lunch? The ACS-SA is selling hoagies every Tuesday outside the lecture halls during the lunch hours. They are only \$4.50 and are from Uncle Sam's!

**PLEASE SUPPORT
OUR ACS-SA**



October is already upon us, which means for many of us the dreaded beginning of exams and long hours at the library. However, at the end of the dark tunnel lies the light of a glorious holiday people have been preparing for since September: Halloween.

As the weather (hopefully) cools down and the spooky decorations start appearing in stores, a vast array of costumes also become available. I know I always like to stop by a costume store, like Spirit Halloween, if I happen to pass by one and wander through the aisles and aisles of costumes. With so many different types of costumes, from simple ketchup and mustard suits to detailed sequined dresses, it is impressive that these costumes share the same materials that make them.

Almost all costumes are created using synthetic fiber fabrics. What this entails is that the fibers that make up the fabric of the costumes are made up of polymers made in a lab. One of the most commonly used polymers in costumes and various other types of clothing is nylon. Many of you may have heard and seen the word nylon but may not have thought too far into just what this polymer is and how it allows us to wear the creative costumes we annually choose.

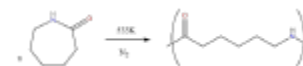


Figure 1.
Commonly used types of nylon

Nylon is a generic name used for a family of synthetic polymers that are based on aliphatic or semi-aromatic polyamides. The two types of nylon most commonly used in textiles and clothing are nylon 66 and nylon 6. Nylon 66 is formed by a polycondensation of hexamethylenediamine and adipic acid; nylon 6 is synthesized by a ring-opening polymerization of caprolactam.

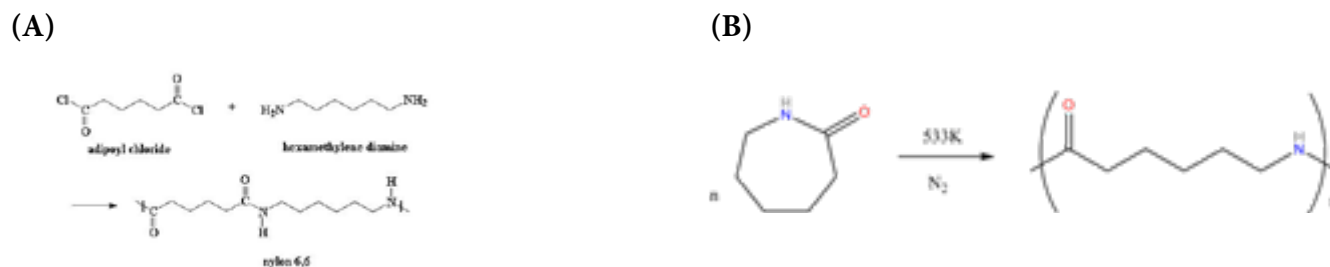


Figure 2. (A) Synthesis of nylon 66 (B) Synthesis of nylon 6

The variations in the synthesis of the two types of nylon result in varying physical properties, such as melting point and strength. However, both types retain a high strength-to-weight ratio, allowing the polymers to be woven into fibers of varying thickness to accommodate desired functions. For example, fine fibers of nylon can be woven into tights. The large ratio allows the fabric of the tights to be stretchy. Nylon blend fabrics were introduced due to complaints that pure nylon fabrics irritated the skin and trapped moisture between the skin and fabric. The blending of nylon with other existing fibers such as cotton, polyester, and spandex gave people greater control over the fabric shape and allowed for greater fashion possibilities.

It's amazing how these molecules have allowed such change in the way clothes can be manipulated to fit our needs, from practicality to style to some of the most bizarre costumes I've seen around campus. So the next time that you guys are planning on dressing up for Halloween, keep in mind just how amazing that such strong small molecules can let you be a bottle of ketchup.

References:

<http://pslc.ws/macrog/nysyn.htm> and <http://www.pbs.org/wgbh/aso/databank/entries/dt35ny.html>



Green Chemistry

by: Andrew Warburton



Hi guys! I hope everyone's first semester is going well! The Pitt Plague has been ravaging the student body, so please remember to wash your hands and sneeze into a tissue!

I want to start this Green Chemistry Article by extending my thoughts and condolences to the families and victims of hurricanes Harvey and Irma. In case you have been out of the country or haven't been keeping up with the news, these are class 4 hurricanes that tore through southern parts of the United States and the Caribbean islands. The US Virgin Islands, the British Virgin Islands, St. Martin, St. Barthelemy and Anguilla were all devastated by Irma. Over 40 people have died from Irma.¹

The effects in the United States are just as severe, with damage from both hurricanes expected to cost over \$150 billion dollars in damages, insurance, and aid.² Houston is the fourth-largest city in the US and with so many of its citizens displaced and infrastructure destroyed, it has strained many larger cities such as Dallas. There is a constant gasoline and resource shortage throughout Texas as families and industries try to compensate for the devastation.

Florida is no different with damages over \$50 billion dollars. Although Florida has more hurricane experience (especially since hurricane Andrew), the economic stagnation and social disruption send Florida into a mini-recession as people try to restart their lives.

Why talk about hurricanes in a Green Chemistry Article? Tropical storms and severe weather patterns are directly correlated with an increase in global temperatures. Without going into too much detail in how hurricanes form, the warmer the oceans and atmosphere become, wind speeds increase and the likelihood and strength of hurricanes increase dramatically. In 2017, ocean temperatures increased between 0.5 and 1 degree Celsius compared to last year. Although that may not seem like that much, slight changes on such a large-scale lead to increase El Nino activities.

The shocking fact is that this year is not an El Nino cycle, meaning that this is not supposed to be an active year, yet two – possibly a third with Maria – have ravaged the Caribbean and the United States. Along with hurricanes, monsoons have become more active across the world. This summer in Mumbai, 5 inches of rain poured into the densely-packed city and killed over 1,000 people.³ This shut 1.8 million children out of school and displaced over 2 million people. The entire infrastructure of Mumbai was destroyed and it could be years until it is back to where it was.

While some may argue against climate change's direct involvement with these tropical storms, no one should dispute the existence of climate change. As the name suggests, our climate is changing, and changing rapidly. These hurricanes have decimated cities and will continue to do so. Our retrospective actions are incredible, providing many of our citizens homes and schools to let them live out their lives, but our prospective actions are deplorable. We need to reduce our carbon footprint to reduce the effects of global warming. There is still time to change. There comes a point where politics and money cannot buy out the truth; the truth that our planet is heating up and we're now paying the price. Don't let innocent Texans and Floridians suffer because of administration turning their backs on conservationism and environmentalism. As these days grow colder, try not to turn up the thermostat, turn off the TV when you're not watching it, and turn off the lights when you leave the room. Just those simple actions will soon add up and will help more people in the long run than retrospective actions.

References

1. <http://www.cnn.com/2017/09/17/americas/atlantic-storms-jose-lee-maria/index.html>
2. <http://money.cnn.com/2017/09/15/news/economy/irma-harvey-damage-who-pays/index.html>
3. <http://www.cbsnews.com/news/flood-in-india-mumbai-area-affected-south-asia-from-monsoon-rains-over-1000-dead/>