CHEM MAJOR NEWS

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

Volume 16, Issue 2 October 6, 2006

REGISTRATION

SET DATES:

October 26:	Registration begins for Spring Term 2074 for **Seniors Only**.
October 26:	Add/drop begins for Spring Term 2074.
October 30:	Registration begins for Spring Term 2074 for all **other degree seeking** students.
October 31:	Happy Halloween!
November 13:	Spring Term (2074) Registration for non-degree students.
November 17:	April 2007 (2074) graduation applications due in 140 Thackeray Hall.
November 22-November 26:	Thanksgiving Recess. **NO CLASSES!! Have a great Holiday!**

IMPORTANT:
WHEN SHOULD YOU SEE YOUR ADVISOR?

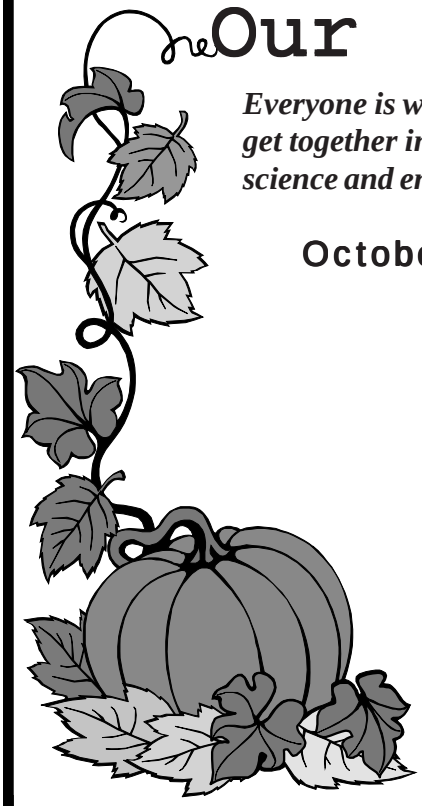
Advisees who already **have a permanent advisor** should make their registration appointments with that advisor on or after October 24. **Remember to bring a copy of your academic record with you to this meeting.**

Advisees who (via a letter to be sent October 9) were asked to select their permanent advisors should do so after October 16. 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) or Dr. Huston after October 23.

NEWSLETTER STAFF: **Melissa Forry**-*Co-President*, **Erica Trimble**-*Co-President*, **Max Osipov**-*Vice-President*, **Ted Boron**-*Secretary*, **Zach Pozun**-*Treasurer*, **Neil Robertson**-*Outreach Coordinator*, **Chris Fennig**-*Assistant Outreach Coordinator*, **Rich Fair**-*Co-Newsletter Editor*, **Katie Hammer**-*Newsletter Co-Editor*, **Eric High**-*Senior Affairs*, **Kim Masuga**-*Senior Affairs*, **Valerie Mitchell**-*Senior Affairs*, **Andy Petit**-*Senior Affairs*, **Kanika Gupta**-*Webmaster, and* **Regina Mahouski**

Our October Schedule



Everyone is welcome to attend our weekly ACS-SA meetings. Every Friday at noon we get together in 132 Chevron Science Center to hear interesting talks, learn more about science and enjoy each other's company. Come join us for all of the following meetings.

October

06 Registration Already!
with George

13 Preparing for National Chemistry Week 2006
ì Your Home-Itís All About Chemistryî
with Neil and Chris

20 Pumpkin Painting and Halloween Extravaganza
on the Front Patio

27 ìExploring Protein Recognition Events Us Theory and Simulationî
with Dr. Lillian Chong

Halloween Pumpkin Fest

Come join the fun this October 20th 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 klh29@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 132 CHVRN.

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.

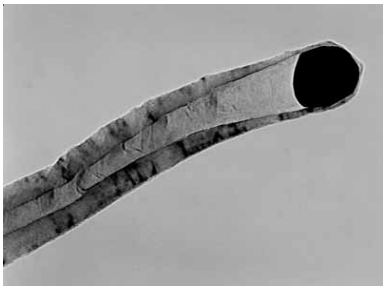
Good luck as you strive towards academic excellence!

TWO NEW 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 (2074). Chem 1460 will be taught by Dr. Ken Jordan and Chem 1620 will be taught by Dr. Alex Star. Both should prove to be at the forefront of modern chemical science.

CHEM 1460-"Modern Computational Science"
Computer modeling/simulation methods are of rapidly growing importance throughout the sciences, engineering, and many other disciplines. In this course the students will become familiar with modeling methods that are widely used in chemistry. Students will use the user-friendly Mathcad software to understand how the key algorithms function, and will use popular modeling packages to address realistic chemical problems.

CHEM 1620 – "Atoms, Molecules, and Materials – Introduction to Nanomaterials"
This will be a course designed to increase students' knowledge and understanding of emerging field of nanotechnology. Nanotechnology deals with materials in nanometer scales, typically one to 100 nanometers. One nanometer is one billionth of a meter; approximately the length of five silicon atoms placed side-by-side or the width of a single strand of DNA. On nanometer scale, materials may possess new physical properties or exhibit new physical phenomena. For example, band gaps of semiconductors can be effectively tuned by adjusting their nano-dimensions. For nanomaterials, number of surface atoms becomes a significant fraction of the total number of atoms and the surface energy starts to dominate. This changes thermal stability and catalytic properties of many materials as we know them.
During the course, the students will gain a sound appreciation of different techniques and instruments involved in the preparation and characterization of nanomaterials. Current and future applications of nanomaterials in medicine, defense, energy production, and computation will be also discussed.



MULTIWALL CARBON NANOTUBE WITH ITS SEEDING PARTICLE (TEM)

Green Chemistry

by: Michael Kowalski, Green Chemistry Editor

Hello everyone, my name is Michael Kowalski. I am a senior this year here at Pitt and I will be your green chemistry editor for the year. This is the first of six articles, aimed to introduce the topic of green chemistry, list some broad applications, a brief history of green chemistry and what the EPA is doing to help promote green chemistry. By the end of the sixth article, I hope to expand your knowledge of green chemistry by showing you how green chemistry is applied today throughout various chemical industries.

Green chemistry is defined as the use of chemistry for pollution prevention. To elaborate more, green chemistry consists of the design of various chemical products and the processes that help to reduce and or eliminate the use and generation of hazardous substances. Green chemistry applies innovative scientific solutions to real-world environmental problems and concerns. This offers environmentally friendly alternatives to the chemicals and processes that create hazardous waste materials. Green chemistry is a new and growing area of chemistry used to help promote pollution prevention at the molecular level.

Green chemistry has three main focus areas in which new technologies can be categorized may fit into more than the following:

1. *The use of alternative synthetic pathways for green chemistry.*
2. *The use of alternative reaction conditions for green chemistry.*
3. *The design of safer chemicals that are, for instance, less toxic than current alternatives or naturally safer regarding the potential of accidents.*

The reason why green chemistry exists today is because of the Pollution Prevention Act of 1990. This was a national policy established to prevent or reduce pollution at its source whenever possible. This act also provided expansion beyond traditional EPA programs and allowed for new ideas and theories on how to protect human health and the environment. The EPA now has an Office of Pollution Prevention (OPPT) that helps to explore the ideas of improving existing chemical products and processes to make them less harmful to the earth and its inhabitants.

Since 1991, the OPPT created a program called the "Alternative Synthetic Pathways for Pollution Prevention." This program helped provide grants for research projects to help expand Green chemistry to everyone. The Green Chemistry Program has since collaborated with many companies and industries to promote pollution prevention via green chemistry. The goal of this EPA program is to promote the research, development, and implementation of growing chemical technologies that help prevent pollution in a cost-effective and scientifically acceptable manner.

The EPA offers a number of grants through its Green Chemistry Program which supports research in the area of environmentally benign chemistry. The grants are also used to help promote educational activities, international initiatives, conferences and meeting, as well as green chemistry tools. This program consists of four major program areas including green chemistry research, the Presidential Green Chemistry Challenge, green chemistry education, and scientific outreach. To find more about these programs, please visit the EPA's website at www.epa.gov/greenchemistry and click on EPA Projects & Programs.

"Green Chemistry Program Fact Sheet" March 2002. 16 September 2006.

<http://www.epa.gov/greenchemistry/pubs/docs/general_fact_sheet.pdf>

Sounds Delicious, Right?

by: *Katie Hammer, Co-editor*

As the pace of the semester continues to increase, we tend to eat more fast food and other snacks during our late-night study sessions. If you have ever taken a few brief moments to look at the food label, you'll see that often there is an ingredient listed as "Natural and/or Artificial Flavors."

What we rarely think about is the "cocktail of chemicals" that make up these flavors. "Flavors" that are actually man-made additives to processed foods. Sounds delicious, right? Canning, freezing, and dehydrating techniques (or other processes) often destroy the original flavor of the food. Americans crave savory tastes, so the flavor industry was born. Almost 90% of the money Americans spend on food goes towards some sort of processed food, supporting the further development of "tastier" and more accurately replicated flavors.

International Flavours and Fragrances (IFF) is the world's largest flavor manufacturing company. The creative artists behind these chemical compositions are known in the industry as flavourists. They tend to keep the chemical combinations and even the names of the suppliers they provide for secrets.

Flavors are typically made up of many different volatile chemicals, though one single compound provides for the dominant aroma. To name a few: ethyl 2-methylbutyrate smells just like an apple, methyl-2-pyridyl ketone makes a food taste like popcorn, ethyl 3-hydroxybutanoate supplies the taste of marshmallow. The technology is so advanced that if you sit there blindfolded with a test tube of certain chemicals in front of you, you would swear a freshly grilled cheeseburger sat on your plate.

So what does natural flavor mean anyway? All-natural flavor ingredients begin as nature's materials isolated by physical processes such as distillation or extraction. No chemical reactions are involved in the creation of "all-natural flavors", giving consumers the impression that it is a healthier choice. Oleoresins, a mixture of oils and resins naturally found in plants, are typically used to create these natural flavors. The stickiness and viscosity of oleoresins make them difficult to work with. Distillates are found to be an effective, more manageable substitute.

So what is the purpose of creating artificial flavors? It's simple: synthetic flavors can survive the harsh manufacturing processes of food when natural flavors are lost. Synthetic flavors usually even contain the same chemical as the natural flavor, but it may be a chemical that is hard to isolate or cannot be mixed to taste right in the food. The other benefit to synthetic ingredients is that an endless amount of them can be created since there is no limited quantity of the chemicals on storage room shelves.

Flavourists are also responsible for the creation of fragrances, like perfumes, colognes, and air fresheners. Both the smell and the taste of flavors is important to their overall appeal. This is why even cooking processed foods with these added flavors in a fast food restaurant smells almost identical to how it would if you were cooking fresh foods in your kitchen.

So, the next time you praise the yummy beef taste in your McDonald's French fries (though they're cooked in vegetable oil) or the caramel latte you had at Starbucks (with no natural caramel actually added) or the bag of Doritos in your closet (with very little real cheese) or the authentic taste of your frozen Chinese food, think about the chemicals that compose these tastes we crave. And by all means, please enjoy!

Sources:

Fast Food Nation by Eric Schlosser (Houghton-Mifflin, 2001) "Why McDonald's Fries Taste So Good" Chapter

"Food Ingredients and Analysis International" Journal – March 2005 issue Pgs. 28-29 (Accessed online: http://www.treatt.com/Documents/Technical/FIA_MAR05.pdf#search=%22flavourists%22)

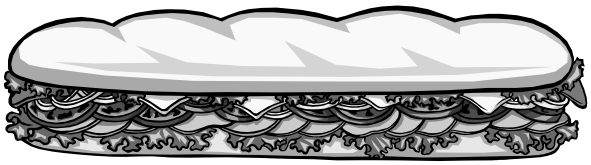
International Fragrance and Flavors (IFF) Website http://www.iff.com/internet.nsf/HomePage!OpenForm

Periodic Table Puns

Use your imagination and the elements in the Periodic Table to solve each pun! Example: Five Cents-Nickel, Ni

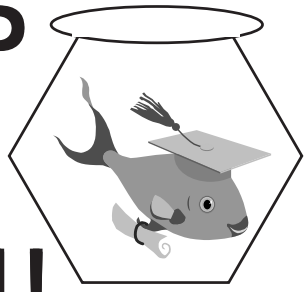
1. What you do in a play _____
2. What you do to a wrinkled shirt _____
3. "Tasty" part of your mouth _____
4. Someone who likes to start fires _____
5. Superman's weakness _____
6. Your brother or mine _____
7. Extinct _____
8. Imitation diamond _____
9. A type of flower _____
10. Las Vegas lights _____
11. Police _____
12. Golden State _____
13. Name of a goofy convict _____
14. Mr. Mony's enemy _____
15. What you do to flowers _____
16. What you did to ripped jeans _____
17. A "prize" element _____
18. A very smart person _____
19. Person from the big blue planet _____
20. A fur seller _____

Uncle Sam's Hoagies!!



Remember... The ACS-SA will be selling hoagies every Tuesday for $3.75. Please support our ACS-SA.

STOP AND GAIN!



The fishbowl is a great place to gain information about internships, job opportunities and other things of interest to science majors. Stop and check the bulletin boards for the latest information. Things are added on a regular basis.

COMEDY CORNER....

By: Kyle Hovick