

THE OCTAGON



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Lehigh Valley Section of the American Chemical Society

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Mark your calenders!
818th Meeting of the LVACS
Monday September 13,
Lafayette College

Location: Faculty Dining Hall, Lafayette College

Reception: 5:30, cheese and fruit

Dinner: 6:00 PM

Business Meeting: Business Meeting at the conclusion of dinner

Talk: 7:30, Hugel Science Center, Jaqua Auditorium (Rm 103)

Menu: Buffet: chicken Florentine, braised beef tips and panko-encrusted salmon; green beans with carrots and red peppers, roasted potatoes; apple pie

Cost: \$20, students and retirees \$10

Contact: Debbie Bastinelli at 610-330-5213 or bastined@lafayette.edu by September 8

Directions: directions can be found on the web at <http://www.lafayette/community/directions.html>

Speaker: Dr. Jennifer Mass

Talk: *“When Masterpieces Meet X-Rays: Recovering Hidden and Vanishing Images in Paintings”*

Jennifer Mass received her B.A. in chemistry from Franklin and Marshall College in 1990, her M.S. in Inorganic Chemistry from Cornell University in 1992, and her Ph.D. in Inorganic Chemistry with a concentration in Materials Engineering in 1995. After graduating from Cornell she received a fellowship from the Andrew W. Mellon Foundation to conduct research at the Sherman Fairchild Center for Objects Conservation at the Metropolitan Museum of Art. At the Metropolitan she conducted research on the use of metallurgical byproducts as glass colorants. Dr. Mass spent 1998-2001 as an assistant professor in the Art Conservation Department at The State University of New York College at Buffalo. During this time she continued her research on ancient Roman and Egyptian glassmaking practices, and began her studies in glassmaking in late antiquity Venice. In the fall of 2001 she joined Winterthur's Conservation Department and became an adjunct faculty member for WUDPAC. In her role as Senior Scientist in Winterthur's Scientific Research and Analysis Laboratory, she has conducted research on Pennsylvania German sulfur inlaid and painted furniture, fraktur, and confocal x-ray fluorescence microscopy. She has published many articles on her research in both the art conservation and materials science literature. Her teaching interests include instrumental methods of analysis and the inorganic chemistry of museum objects.

Abstract: The scientific analysis of objects of art is

carried out to address questions about a work's authenticity, construction, state of preservation, and mechanisms of degradation. Given the irreplaceable nature of the works studied, this research must be conducted either totally nondestructively or on microsamples alone. A confocal X-ray fluorescence microscope was designed at Cornell's High Energy Synchrotron Source (CHESS) and has been used with conventional microanalytical methods to nondestructively reproduce a buried painting by N.C. Wyeth. N. C. (Newell Convers) Wyeth (1882-1945) is an iconic American artist best known for his famous illustrations for the works of Robert Lewis Stevenson and for popular magazines like the Saturday Evening Post. Several of his most valued illustrations have been lost from view because they were painted over, either by N.C. himself or by his son, groundbreaking 20th century American artist Andrew Wyeth. The first virtual reproduction of one of Wyeth's buried works is presented here.

Other studies include The Armorer's Shop (1644), attributed to Flemish genre painter David Teniers the Younger (1610-1690). Confocal data, along with dendrochronological and infrared reflectography data, provided a chronology of construction suggesting that the painting is the only surviving collaboration of Teniers with Flemish Baroque painter Jan Brueghel the Younger (1601-1678). Current research includes a XANES study of Henri Matisse's masterpiece *Le Bonheur de vivre* (The Joy of Life, 1905-6) which was undertaken to identify the origin of the fading, darkening, and flaking of its yellow paints. These alterations were identified in the painting's cadmium yellow pigments, and current data suggests the type of oxidative cadmium sulfide degradation that has been observed in turn of the 20th century works by Picasso, van Gogh, Seurat, and Leger. The implications of this phenomenon for the preservation and interpretation of Matisse's seminal work will be discussed.

Summer Event - Play Ball! LVACS and the Iron Pigs

The Section had another 100 seats for the Iron Pigs game on July 26. This was the second year for the event and all the seats were sold out again. The

winner of the Organic Scholarship, Jessica Frey, threw out the first pitch for the Section. All members in attendance also received their LVACS t-shirts with a cryptic message hidden in the elements on the back. A great time was had by all. Thank you to the Iron Pigs Organizing Committee members for another successful summer outing!



The game went into extra innings, but the Iron Pigs finally lost 6-3 after a hard 15-inning battle. We were lucky to get the chance this year to see the Phillies prospect Domonic Brown, who was called up to the Major League Club two days later after a brief 28-game stay in the Lehigh Valley.

A special thanks goes to Chester Crane and Lindsey Welch for organizing the event, and to Pat Smiley for designing the t-shirt.

ACS announces its 2010 class of ACS Fellows

Whether it's making new materials, finding cures for disease, or developing energy alternatives, these fellows are scientific leaders, improving our lives through the transforming power of chemistry," said ACS President Joseph S. Francisco in announcing the 2010 class of ACS Fellows. "They are also consummate volunteers who contribute tirelessly to the community and the profession."

The fellows program began in 2009 to recognize and honor ACS members for their outstanding achievements in and contributions to the science, the profession, and service to the society. This year's group members, like the first 163 ACS Fellows named in 2009, represent academe, industry, and government. Additional information about the program is available at www.acs.org/fellows.

192 distinguished scientists have been selected as 2010 Fellows of the American Chemical Society. These ACS members were selected based on their outstanding achievements in and contributions to the science, the profession, and their excellent service to the Society. Similar to the inaugural class of 2009, the Fellows represent a wide range of disciplines and geographic locations, representing 33 technical divisions and 79 local sections. The 2010 class also includes distinguished scientists and engineers from industry, academia, and government.

*Congratulations to LVACS' own
Paul Bouis
2010 ACS Fellow!*

A complete list of the Fellows can be found in the August 2, 2010 issue of C&EN. For additional information on the ACS Fellows Program, go to www.acs.org/fellows or send an email to fellows@acs.org.

Science Café at Barnes & Noble

Chocolate - Food of the Gods!

The second LVACS Science Café will be presented by Professor Michelle C. Geoffrion-Vinci of Lafayette College on Thursday, September 16 at 7 pm. Her presentation at Barnes and Noble in the Southmont Center off of Route 33 will be on the "Food of the Gods: Chocolate and Western Civilization." Professor Geoffrion-Vinci, an associate professor of Spanish in the Department of Foreign Languages and Literatures, is a noted scholar and dynamic teacher, which was recognized with the Thomas Roy and Lura Forrest Jones Lecture Award for Outstanding Scholarship and Teaching in 2004. In order to better understand the history and chemistry of chocolate, there will be a generous supply of chocolate for the members of the audience.

As part of the Section's outreach efforts to the general public, the Section will continue to sponsor Science Cafés, with the next one, "A Warm Arctic? Alaska in an Ancient Greenhouse Climate" scheduled for

October 13 by Professor David Sunderlin. If you have any ideas for topics and/or speakers for the Science Cafés, please contact Bill Miles (milesw@lafayette.edu). We hope to make the Science Cafés an enduring and highly visible outreach effort of the LehighValley Section of the ACS.

LVACS has a new look and a new home online



Please check out our new url www.lvacs.net the new home of the Lehigh Valley Section of the American Chemical Society.

We also have a fresh look - go take a peek!

Nobel Trivia

Facts about the Nobel Prize in Chemistry

On 27 November 1895, Alfred Nobel signed his last will and testament, giving the largest share of his fortune to a series of prizes, the Nobel Prizes. As described in Nobel's will one part was dedicated to "the person who shall have made the most important chemical discovery or improvement". Learn more about the Nobel Prize in Chemistry from 1901-2009.

Number of Nobel Prizes in Chemistry

101 Nobel Prizes in Chemistry have been awarded since 1901. It was not awarded on eight occasions: in 1916, 1917, 1919, 1924, 1933, 1940, 1941 and 1942. Why were the Chemistry Prizes not awarded in those years? In the statutes of the Nobel Foundation it says: "If none of the works under consideration is found to be of the importance indicated in the first paragraph, the prize money shall be reserved until the following year. If, even then, the prize cannot be awarded, the amount shall be added to the Foundation's restricted funds." During World War I and II, fewer Nobel Prizes were awarded.

Number of shared/unshared Nobel Prizes in Chemistry

62 Chemistry Prizes have been given to one Laureate only. 22 Chemistry Prizes have been shared by two Laureates. 17 Chemistry Prizes have been shared between three Laureates. Why is that? In the statutes of the Nobel Foundation it says: "A prize amount may be equally divided between two works, each of which is considered to merit a prize. If a work that is being rewarded has been produced by two or three persons, the prize shall be awarded to them jointly. In no case may a prize amount be divided between more than three persons."

Multiple Nobel Laureates - Dominated by Chemists!

The work of the International Committee of the Red Cross (ICRC) has been honoured by a Nobel Peace Prize three times. And the founder of the ICRC, Henry Dunant, was awarded the first Nobel Peace Prize in 1901. Linus Pauling is the only person to have been awarded two unshared Nobel Prizes - the 1954 Nobel Prize in Chemistry and the 1962 Nobel Peace Prize. Other notable "multiple" laureates are:
J. Bardeen - Physics 1956 and 1972
M. Curie - Physics 1903 and Chemistry 1911
L. Pauling - Chemistry 1954 and Peace 1962
F. Sanger - Chemistry 1958 and 1980

Chem Shorts for Kids

by Dr. Kathleen A. Carrado, Argonne National Labs
Chicago Section of the American Chemical Society

Please note: All chemicals and experiments can entail an element of risk, and no experiments should be performed without proper adult supervision.

Chemistry in a Teabag

Kids, there are all kinds of interesting things to think about when someone dips a teabag into a cup of hot water to make their hot tea. Inside a teabag are the crushed up dried leaves of the tea plant. Most of a tea leaf is cellulose, which is the major structural material of all plants. Cellulose is a very long chain (polymer) of glucose molecules and it does not dissolve at all in water. The tea molecules that will dissolve in water include tannins, flavonoids, and caffeine. In order to separate the molecules you don't mind drinking from

the leaf pieces, a teabag is used. Did you ever see a coffee filter? The teabag material is a lot like that. It is a porous paper that can get wet but is strong enough to not break and let the leaves go through. So, in making a cup of hot tea you are also doing an extraction and a filtration - these are two tools that chemists use to isolate compounds. Try it yourself! You can also cut open a teabag and take a look at leaves before and after.

Tannins are actually a class of organic compounds, some of which are used to "tan" hides into leather, and some are used in inks and dyes. The brown color of tea is also due to flavonoids, which are organic molecules that are natural pigments. Volatile oils give the flavor. About 2-5% of tea leaves is caffeine. An average 5 oz cup of tea contains 25-75 mg caffeine (some people prefer decaffeinated or herbal teas instead).

The tea leaves are picked by hand, left to wilt, then rolled and dried. If they are allowed to ferment before drying, you get black tea. Partially fermented leaves gives oolong tea, and tea not fermented at all is the so-called green tea. The tea plant is a relative of the camellia, so botanists have named it "Camellia thea". It is an evergreen shrub or tree 9-60 feet high. The first indisputable reference to the medical use of tea is from a Chinese dictionary in 350 A.D., but some folks even say there is evidence that a Chinese emperor used it all the way back in 2737 B.C. And, since it is native to Indochina and India, tea was grown for drinking even before China used it as a medicine.

Dinosaur Science

Kids, dinosaurs didn't write memoirs or take family photos. But scientists can dig up the real dirt about dinosaurs, thanks to fossils. The only proof scientists have of dinosaurs is their fossilized bones. Original bones are relatively soft and fragile things that cannot survive the test of time, especially not the past 65 million years when dinosaurs once lived. But luckily for us, when some dinos died their bones were covered by mud, rock, or sand. Under this protection and through the years of soil erosion, the bones absorbed minerals from the earth. These minerals made the dinosaur fibulas, mandibles, and other bones very, very hard and resistant to erosion.

It's not too hard (ha ha, get it?) to make your own fossil. First you'll need to cut a small sponge into a bone-like shape using a pair of scissors. Then fill a big bowl with enough sand to bury the sponge, and make sure it's completely covered. While stirring, add enough salt to a pitcher of water until the water becomes murky. Pour this salty water into the bowl of sand until it's thoroughly wet. Put the bowl in a sunny place. This really needs a lot of sunlight so it will take at least a week. Maybe even a few more days if the days are getting shorter and there is not so much sunlight. When at least 7-10 days have passed you can dig up the sponge. In this experiment the mineral that hardens the spongy bones into hard fossils is salt (sodium chloride).

Did you know that blue whales are even bigger than the biggest dinosaur, the brachiosaurus, which was 35 tons and 46 feet high? The smallest known dino was compsognathus; at 15 pounds it was about the size of a chicken. Excavate these recent books about dinos from a library: "The X-Ray Book of Dinosaurs" by K. Severin (Franklin Watts Pub., 1994), "Dinosaurs: Strange and Wonderful" by L. Pringle (St. Martin's Press, 1995), and "Inside Dinosaurs" by T. Dewan (Doubleday, 1993).

Thanks and acknowledgements to: "Bill Nye: The Science Guy" at nyelabs.kctcs.org Submitted by: K. A. Carrado, Elementary Education Committee.

"D" is for Dissolve

This column is for you real little ones - those of you who have just begun school and are learning your letters. You will learn the letter "D, d" with the basic scientific concept of dissolving something. Get a clear plastic cup, water, a pencil, a paper towel, a twist-tie, and a kool-aid packet.

Carefully cut the paper towel into four equal squares. Place about one teaspoon of Kool-Aid in the center of a square. Fold it shut and close it with a twist tie. Tie the ends of the twist tie around the center of a pencil. The pencil acts as a support rod to dangle the kool-aid packet into the empty cup - just place the pencil down lengthwise on top of the cup's opening. Pour water into the cup until it just touches the bottom of the packet. Observe for a while, then add some more

water.

Write your name on a sheet of paper and a title: "D d Dissolve" to practice your "d's". Then draw pictures of four simple cups. On two of them, draw your pencils and packets as well as you can. Draw in water levels on all four cups. (Or your teacher or a parent can have these already drawn for you). Now draw what happens when (1) the packet barely touches the water (2) the packet is soaked in water (3) when crystals are sprinkled directly to the water (no packet), and (4) after some time has passed. Using the paper towel, a type of "schlieren" effect occurs, like when heat waves are seen over a hot surface. You can also try other materials to test whether or not they will dissolve, such as table salt (yes), sugar (yes), or sand (no).

Thanks and acknowledgements to Marlisa Ebeling, a primary level teacher in Naperville District 203.

News from National ACS

Countdown to International Year of Chemistry (IYC) 2011: Get Involved Now!

We need your ideas!

Through the IYC-2011 initiative "365: Chemistry for Life," a different aspect of chemistry will be highlighted every day on www.acs.org. Submit ideas for a favorite element, compound, discovery, process, chemist, or chemistry innovation at www.acs.org/iyc2011, by September 17, 2011. Suggestions should fall into one of four categories: • Energy • Environment • Materials • Health Selected submissions will receive recognition and an IYC-2011 pin and t-shirt.

IYC 2011 toolkits are now available!

Visit our website to view and download templates, guidelines and ideas for planning and celebrating IYC 2011. Don't see what you need? Let us know at iyc2011@acs.org.

Subscribe to the International Year of Chemistry (IYC) Bulletin Now!

Sign-up to receive the monthly IYC Bulletin intended for those individuals involved in grassroots promotion, planning and execution of IYC programs, events and initiatives. Visit our website to learn more about our

many activities and initiatives celebrating IYC-2011.

ACS Careers Job Club Webinar Series:

Whether you are looking for your first job or seeking to advance or transition in your career, ACS Career resources give you a competitive advantage in your job search. ACS Careers offers members like you invaluable resources from one-on-one career consulting, wage and salary information, and dynamic webinars to hone your job search skills. ACS Careers is the job search resource for chemists and scientists at all levels of experience and education. Please join us for the follow informative webinars and Get a Jump on Your Career!

Sustainability and You

Come find out how sustainability is being integrated into today business strategies; learn what skills will be needed for you to lead & succeed in this environment. Date/Time: September 14th from 1:00 to 2:30 pm ET. There will be a 1 hour presentation followed by 30 minute Q&A.

Register: <https://www2.gotomeeting.com/register/749204843>

Guest speaker: Randi Schoenfelder, Managing Partner Theodolite Human Capital, LLC

Ann Lee-Jeffs, Manager Product Stewardship, Johnson & Johnson

Today's scientists face the challenge of meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. This innovation-rich approach to scientific discovery will require an understanding and appreciation of strategic thinking and leadership that integrates continual learning with collaboration across knowledge silos and institutions.

Our presenters will share their findings and experiences in integrating sustainability into science-based companies to increase awareness, literacy and action on greener approaches. You'll learn about industry sustainability programs and strategies, and gain an awareness of the competencies needed to support these strategies. Real life case studies will be shared to demonstrate effective programs that utilize the complete life cycle in creating and distributing greener products.

Technical and Leadership Skills to Advance Your Sustainability Toolkit

Advance your career as more companies move to a sustainable business model

Date/Time: October 12th from 1:00 to 2:30 pm ET. There will be a 1 hour presentation followed by 30 minute Q&A.

Register: <https://www2.gotomeeting.com/register/606241650>

Guest speaker:

Randi Schoenfelder, Managing Partner Theodolite Human Capital, LLC

Ann Lee-Jeffs, Manager Product Stewardship, Johnson & Johnson

ACS careers in partnership with Theodolite Human Capital, has conducted a comprehensive study to find out what organizations will need to support their sustainability strategies, and what ACS members will need to retool and advance their careers in the new green economy.

A unique blend of technical and leadership skills will be needed to market and position yourself for growth in this environment. Our speakers will share knowledge and findings, and answer your questions around skills needed to grow your career.

Aligning Your Unique Capabilities with the Goals and Strategies of Companies

Learn how companies are using Competency Models in their Workforce Planning

Date/Time: November 16th from 1:00 to 2:00 pm ET.

Register: <https://www2.gotomeeting.com/register/761716626>

Guest speaker:

Randi Schoenfelder, Managing Partner Theodolite Human Capital, LLC

Human Resource professionals have increasingly used the competency based approach in all aspects of HR Management, from recruitment and selection, training and development, succession planning and performance management. Using competency models in selection goes beyond basic knowledge, skills and abilities and incorporates business environment and company strategy. The use of competency models in the selection process enables companies to not only hire good people, but hire the people that will most likely be successful in their company.

Come find out how high performing companies use competency models, and learn how you can best identify competencies in your own background, and convey them to hiring managers and HR professionals.

If you ever needed an excuse to play, here it is.

Hit the links with industry colleagues in support of talented undergrads starting their science careers. Your participation in the SOCMA Member/Guest Golf Tournament will support the American Chemical Society Scholars Program, which provides scholarships, mentoring, and internships to guide underrepresented minority chemical science majors along the paths to degrees and careers in chemistry. Join us to play, network, and support ACS Scholars on September 28 at the exquisite Chester Valley Golf Club in Malvern, PA. Competitive and Red Team slots are available. Register today at www.socma.com/golf.

Who inspired you to work in the chemistry field?

Remember them by making a gift in their honor to the ACS Scholars Program and their name will be listed in the ACS Annual Report. Your gift combined with the devoted attention of mentors will help ACS Scholars reach for their dreams in chemistry. Make a gift in honor at www.acs.org/giving.

Be a Chemistry Ambassador. Help bring chemistry to classrooms this fall!

ACS has developed many ways and educational tools to help kids from kindergarten to high school do more hands-on science this school year, and as a Chemistry Ambassador, the link begins with you!

At the Chemistry Ambassadors website, www.acs.org/chemistryambassadors, you can find links to get you started:

- Need a way to introduce yourself to a teacher? Try our emails that make a great first impression.
- You can print off and hand your local teacher flyers detailing ACS resources to bring science into classrooms
- You can provide ChemMatters to high school chemistry teachers and students. The magazine complements textbooks, and you can view free articles and other resources online at www.acs.org/chemmatters.

- You can volunteer in a classroom either as part of a full outreach program or on a one-time basis. You might lead an experiment with elementary kids using ACS science kits or give a chemistry presentation to high schoolers drawing from your own research.
- You can alert teachers to a wide range of educational resources and programs, including science kits, scholarships, partnership programs with ACS, and curriculum materials.

Help kindle a child's wonder for chemistry and science exploration this school year! Your gifts and time will definitely be appreciated by teachers, students, and parents alike.

20th Winter Fluorine Conference

The 20th Winter Fluorine Conference will be held on January 9-14, 2011 at the TradeWinds Island Grand Beach Resort in St. Pete Beach, FL.

Abstract submission is currently open until Wednesday, September 15, 2010. Areas of programming include Organic, Inorganic, Physical, and Medicinal/Bio- Chemistry. This six-day international interdisciplinary forum will also feature the Award address by the recipient of the 2011 American Chemical Society Award for Creative Work in Fluorine Chemistry. Registration opens on August 2, 2010 and closes on December 10, 2010. Housing also opens on August 2, and closes on December 17, 2010. Visit the conference website at <http://fluorine.sites.acs.org/20thwfc.htm> for further details on the conference.

Upcoming online courses - Prices Reduced!

Essentials of Modern HPLC 1: Fundamentals and Applications

Sept 7 - 28, 2010 - 4 online sessions per course
This course will provide you with an updated overview and a solid working knowledge of high-performance liquid chromatography (HPLC).

Beaker to Barrel: Chemical Engineering for Chemists

Sept 13 - Oct 11, 2010 - 5 online sessions per course
Learn how to apply chemical engineering knowledge

to further your bench-grade process and understand important chemical engineering principals including thermodynamics, material balance, reactor design, and more.

Essentials of Organic Chemistry

Sept 13 - Oct 25, 2010 - 5 online sessions per course
This course will renew your knowledge of the basics of organic chemistry by reviewing nomenclature, oxidation reduction, typical reactions of functional groups from a mechanistic perspective, stereochemistry, and medicinal chemistry.

Effective Technical Writing

Sept 13 - Oct 25, 2010 - 5 online sessions per course
Improve your professional writing skills in this interactive workshop. Class size is limited to ensure individual attention.

Polymorphism in Organic/Pharmaceutical Systems

Sept 23 - Nov 11, 2010 - 8 online sessions per course
This course will review the fundamentals of polymorphism, including the basics of polymorph characterization, screening, and crystallization.

Fall Regional Meetings Announced

45th Midwest Regional Meeting
October 27 – 29
Wichita, KS

Joint 66th Southwest and 62nd Southeastern Regional Meeting
December 1 – 4
New Orleans, LA

Pacificchem 2010
Dec 15-20, 2010
Hawaii, USA



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