

The Crucible

<http://membership.acs.org/P/Pitt>

Volume: XCII No.6

February 2007

Jack Forsythe Wins WPTAG's 2006 Technician of the Year Award

The Western Pennsylvania Technician Affiliate Group (WPTAG) of the Pittsburgh Section of the American Chemical Society (ACS) is pleased to announce Jack Forsythe as 2006 Technician of the Year.

Jack is a Senior Technical Specialist in the Coatings, Adhesives and Sealants (CAS) Business Development Group and has been employed by the company since 1991.

His accomplishments exemplify the extremely high degree of professionalism recognized by this award. An independent panel, consisting of judges from scientific, industrial and academic disciplines, based their selection on qualifications in nine performance categories.

A research technician, Jack has many publications and presentations to his credit. He is the co-author of a patent and has contributed to numerous Memoranda of Invention. In addition, he has presented posters at the annual Bayer MaterialScience Symposium for the past four years.

Jack has received many Quality Improvement Awards over the last fifteen years for process and lab procedure improvements and is an active member of the Building 8 Safety Team. He is responsible for coordinating and conducting tours of the Bayer laboratories for local schools and visiting speakers. As a member of Bayer Association for Science in Communities (BASIC) and the Making

Science Make Sense Team, Jack strives to increase the awareness of science among the general public in the Pittsburgh area.

A graduate of the Chemical Laboratory Technician Program at the Bidwell Training Center in Pittsburgh, Jack has continued to actively support the program. He is currently



Jack Forsythe, winner of the 2006 WPTAG Technician of the Year Award

ly a member of the Industrial Advisory Board where he helps to review, revise and update the curriculum for the program. He makes frequent presentations to the classes and has been instrumental in arranging externship positions for the students.

Jack has a long history with WPTAG. His commitment to the Chemical Technician profession helped to establish a Technician Affiliate Group in Western Pennsylvania. He was a member of the original WPTAG Steering Committee ten years ago and has been active in the organization ever since. Currently, Jack is a member of the WPTAG Executive Committee and serves as the WPTAG - Bidwell Partnership Chair.

To honor his achievement, WPTAG presented Jack with a monetary award and a plaque at a ceremony on December 5. In addition, WPTAG proudly nominated Jack as our candidate for the 2007 National Technician of the Year Award. The national award is administered by the Division of Chemical Technicians (TECH) of the American Chemical Society and is sponsored by the S.C. Johnson Company.

Submitted by: Bernice Karp
2006 WPTAG Chair

Stay up-to-date on all the happenings of the Pittsburgh Section ACS by visiting the section's website.

<http://membership.acs.org/P/Pitt>

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The 2007 Tripartite Symposium

REALITIES and CHALLENGES of GLOBAL WARMING/GLOBAL DIMMING

Sponsored by
Society for Analytical Chemists of Pittsburgh (SACP)
Spectroscopy Society of Pittsburgh (SSP)
American Chemical Society (ACS) Pittsburgh Section

April 23
Eddy Theatre
Chatham College, Pittsburgh, PA
Free Valet Parking off of Murray Hill Avenue

Registration Starting at 11:30 PM

Showing of the movie “An Inconvenient Truth” 12:00 - 1:35 PM
(The movie is being shown in order to foster questions and discussion.
The Tripartite Committee does not advocate a particular person or political opinion.)
Refreshments will be served during registration and movie, but must be consumed in lobby.

Speakers Starting at 2:00 PM, Dinner follows the Symposium

Dr. M. Granger Morgan-Carnegie Mellon Univ; International Expert on Energy and Global Warming

Dr. Beate Liepert - Lamont-Doherty Earth Observatory; Research Pioneer on Global Dimming

Speaker(s) TBA

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Society for Analytical Chemists of Pittsburgh



February Meeting

Monday, February 5, 2007

Duquesne University, Maurice Falk Hall

“New Chemical Approaches to Environmental Remediation in Soil and Groundwater”

Thomas E. Mallouk, Ph.D.

Director

Pennsylvania State University

Student Affiliates Meeting, Duquesne Room (Student Union) 5:45 P.M.

Dinner - Student Union, City View Café (6th Floor) 6:30 P.M.

Technical Presentation 8:00 P.M. Maurice Falk Hall

Soil and groundwater contain a legacy of chemical substances - including halogenated organics and toxic metal ions - from industrial and agricultural processes. Several years ago, scientists at the University of Waterloo developed a remediation method based on zero-valent iron, which has since been investigated by numerous researchers. Chemical reduction by iron converts halogen-containing compounds to relatively innocuous hydrocarbons, and reducible metal ions (Cr(VI), Pb(II), Hg(II), As(V), Tc(VII)) to less soluble forms. Still, the inaccessibility of the deep subsurface and the large volume of soil or water affected by a chemical spill make the clean up of contaminants both costly and technically daunting. To address this problem, we have developed chemical “delivery vehicles” that transport metal nanoparticles through soils. This talk describes the design of these supported metal nanoparticles, their interaction with the complex matrix of natural soils, and the mechanism of their reactions with halocarbons and toxic metal ions.

Bio:

Thomas E. Mallouk was born in New York and received an Sc.B. degree in 1977 from Brown University. He was a graduate student at the University of California, Berkeley, and a postdoctoral fellow at MIT. In 1985, he joined the Chemistry faculty at the University of Texas at Austin. In 1993 he moved to Penn State, where he is now DuPont Professor of Materials Chemistry and Physics. He is best known for his work on inorganic self-assembly, and on the chemistry of porous, lamellar, and nanoscale materials. His research has focused on the application of inorganic materials to different problems in solid state and surface chemistry, including photochemical energy conversion, nanoscale electronics, catalysis and electrocatalysis, chemical sensing, superconductivity, and environmental remediation. He is the author of approximately 250 scientific publications, including a few good ones, and has also edited three books on chemical sensing and solid state chemistry. He is an Associate Editor of the Journal of the American Chemical Society and the director of the Penn State MRSEC, the Center for Nanoscale Science.

Dinner Reservations: Please e-mail Carolyn Benga at crb.sacp@yahoo.com, by Thursday, February 1, 2007 to make dinner reservations. Carolyn's preference for reservations is an email. Should you not have email, please call 412-487-0915 to make dinner reservations. Dinner will cost \$8 (\$4 for students) and checks can be made out to the SACP. If you have any dietary restrictions, let Carolyn know when you leave message.

Parking: Duquesne University Parking Garage entrance is on Forbes Avenue. Upon entering the garage receive parking ticket and drive to upper floors. Pick up a parking sticker at the dinner or meeting. Contact Dr. Mitch Johnson at Duquesne University if any difficulties arise.

**ACS Pittsburgh
Chemists Club**

Pittsburgh Section, American
Chemical Society

Tuesday, February 27, 2007

"Biomedical Cellular Modeling and Supercomputing"

by

Joel R. Stiles, MD, Ph.D.

Director, National Resource for Biomedical Supercomputing
Mellon College of Science and
Pittsburgh Supercomputing Center
Carnegie Mellon University

Duranti's Restaurant

128 N. Craig St., Pittsburgh, PA

6:00 PM

Cocktail Time - Cash Bar

7:45 PM Dinner

8:00 PM Program

For reservations, please call Ed Martin by noon, Friday, February 23, 2007 at (724) 335-0904 or e-mail at esm@icubed.com.

In this talk Dr. Stiles will briefly discuss all of the National Resource for Biomedical Computing research areas together with general multiscale modeling issues, and then concentrate on microphysiological methods and applications. Their microphysiology research centers on spatially realistic, 3D cellular models and uses specialized algorithms to simulate the movements and reactions of molecules within and between cells. They developed software to build and visualize models, as well as to run the simulations. Simulations have been applied to a wide variety of projects, including synaptic transmission and neuromuscular disease. Dr. Stiles will provide an overview of these projects and describe current efforts that couple experimental calcium imaging in stimulated nerve cells with simulations of intracellular calcium diffusion and reaction, leading to detailed models and understanding of neurotransmitter release and synaptic physiology.

Biography

Joel Stiles, MD, PhD is the Scientific Director of the National Resource for Biomedical Supercomputing at the Pittsburgh Supercomputing Center. He is a computational physiologist with research interests in synaptic and cellular microphysiology. His work has helped create and distribute research and teaching software for spatially realistic simulations of cellular function, and has illustrated counter-intuitive structure-function relationships at the nerve-muscle synapse and in specific instances of neuromuscular disease. He is a principal co-author of MCell, a Monte Carlo simulator of cellular microphysiology, and is also the principal architect of DReAMM (Design, Render, and Animate MCell Models). He was a postdoctoral fellow and Neurobiology research faculty member in Cornell University's Department of Neurobiology and Behavior until he joined the Pittsburgh Supercomputing Center in 1999 and Carnegie Mellon University faculty in 2003. He also holds adjunct faculty appointments in the Department of Biology at Carnegie Mellon University and the Departments of Neuroscience and Computational Biology at the University of Pittsburgh.

**Chemists Celebrate
Earth Day:
"Recycling-Chemistry Can"
Illustrated Haiku Contest**

As part of their Chemists Celebrate Earth Day celebration, the American Chemical Society (ACS) is sponsoring an illustrated haiku contest for students in grades Kindergarten-12.

A haiku is a three-line poem with five syllables in the first line, seven in the second, and five in the third. Haikus typically have nature-related themes and do not rhyme, as in the example below.

New materials
once old, now reworked for use
shining in the light.

Possible topics related to recycling and chemistry include:

- Most recyclable materials (e.g. aluminum, glass, paper, plastic) and the related chemistry
- Biodegradable materials
- Energy savings from recycling
- Environmental chemistry
- Green chemistry making recycling easier
- Reduction of pollution/waste because of recycling
- Reuse of materials/renewable materials
- Reduction in greenhouse gases because of recycling
- Properties of materials
- Chemical changes

Please see the next page in regards to contest rules and regulations.

Chemists Celebrate Earth Day Illustrated Haiku Contest

The Pittsburgh Section ACS invites area Kindergarten - 12th grade students to compete in the 2007 Chemists Celebrate Earth Day (CCED) illustrated haiku contest.

Winners will be selected in each of the following categories:

- K - 2nd grade
- 3rd - 4th grade
- 5th - 8th grade
- 9th - 12th grade

Contest Rules

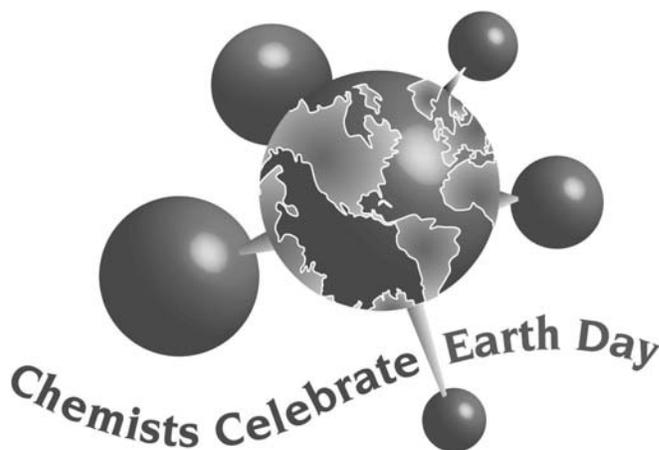
- Poems must conform to the haiku style. Students in grades K-2 may be more free with their syllables; however, no poem may be longer than 25 words.
- The topic of the haiku and the illustration must be related to the CCED Theme, “Recycling-Chemistry Can!” and should reflect some aspect of the chemistry of recycling: materials, processes, or uses for recycled materials.
- All entries must be original works without aid from others.
- Each poem should be submitted and illustrated on an unlined 8.5” x 11” sheet of paper (of any type). The illustration should be created by hand using crayons, water colors, other types of paint, colored pencils or markers. The text of the poem should be easy to read and may be printed with a computer, or the poem may be written on lined paper which is cut out and pasted onto the unlined paper with the illustration.
- Only one entry per student will be accepted.
- All entries must have the following information included on the back of the entry: Student’s name, grade, home address, telephone number, school name, school address, teacher’s name, email, and school telephone number (both addresses are used for sending prizes; please provide complete information).
- Poems must be submitted by Friday, March 30, 2007.
- Prizes: 1st Place in each grade category will receive \$50.
- Winners of the Pittsburgh Section’s contest will be submitted to a national contest. National winners will be announced on or before April 22, 2007.
- ACS is not responsible for lost, damaged, or delayed postal shipments.
- All illustrated haikus and/or digital representations of the haikus become the property of the American Chemical Society.
- Acceptance of prizes constitutes consent to use winners’ names, purposes.

Entries Will be Judged Based Upon:

- Originality and Creativity
- Relevance to and Incorporation of Theme
- Neatness
- Adherence to Haiku Style

Please send entries by Friday, March 30, 2007 to:

Michael Mautino
3485 Frye Ave.
Finleyville, PA 15332
<http://membership.acs.org/P/Pitt>



ChemShorts for Kids: Leafy Chromatography

An archive of all previously published ChemShorts is available online at <http://membership.acs.org/C/Chicago/home.html>.

Since 1992 Dr. Kathleen A. Carrado, a member of the Chicago Local Section and a chemist at Argonne National Laboratory, has submitted a regular column titled "ChemShorts" for the section's newsletter, *The Chemical Bulletin*. Each ChemShort describes a simple and interesting chemistry experiment that a young student (grades K-6) can do at home with adult supervision and common household items. A selected ChemShorts for Kids will be featured in future Cut & Paste publications.

Kids, did you ever wonder about the chemistry of autumn leaf colors? Most plants contain several pigment molecules. If you experiment with different leaves in this activity you will see the wide range of pigments.

You will need leaves, baby food jars with lids, rubbing alcohol, coffee filters (preferably the Melitta type), hot water, and a shallow pan. Take 2-3 large leaves (or the equivalent with smaller leaves), tear them into tiny pieces, and place them into small jars with lids. Add enough alcohol to just cover the leaves. Loosely cover the jars and set them into a shallow pan containing an inch or so of hot tap water. Let the jars sit in the hot water for at least a half hour. Replace the hot water as it cools and swirl the jars from time to time. The jars are 'done' when the alcohol has picked up color from the leaves. The darker the color, the brighter the chromatogram will be. Cut a long, thin (1/2") strip of coffee filter paper for each jar. Place one strip of paper into each jar, with one end in the alcohol and the other outside of the jar. As the alcohol evaporates, it will pull the pigment up the paper, separating pigments according to their molecular size. Pigments with the largest size will move the shortest distance. After 30-90 minutes, remove the strips of paper and allow them to dry. From the information below, can you identify which pigments are present?

The color of a leaf results from the different pigments produced by the plant. The main pigment classes responsible for leaf color are porphyrins, carotenoids, and flavonoids. The color depends mostly on the amount and types of these pigments. The pigment porphyrin has a compound called chlorophyll that is green. The pigment carotenoid has compounds carotene and lycopene that are yellow, orange, and red, as well as xanthophyll which is yellow. The pigment flavonoid has compounds flavone and flavonol (yellow) and anthocyanin that can be red, blue, purple, or magenta.

When leaves are green, it is because they contain a lot of chlorophyll. Chlorophyll masks all other pigment colors. The anthocyanins will mask carotenoids. As summer turns to autumn, decreasing light levels cause chlorophyll production to slow and the green color will fade. At the same time, anthocyanin production in leaves increases in response to increasing sugar concentrations. Leaves with a lot of anthocyanins will turn red. Leaves with good amounts of both anthocyanins and carotenoids will be orange, and leaves with carotenoids but little or no anthocyanins will turn yellow. In the absence of these pigments, other plant chemicals can affect leaf color. An example is tannins, which cause the brownish color of some oak leaves.

Options: Does the season in which the leaves are picked affect their colors? Also try using frozen chopped spinach leaves. If your chromatogram is pale, the next time use more leaves and/or smaller pieces.

Reference:

Dr. Anne Marie Helmenstine at <http://chemistry.about.com/cs/howtos/ht/paperchroma.htm> and <http://chemistry.about.com/library/weekly/aa082602a.htm>

ACS Cut and Paste November/December 2006

SciFinder® Provides Drug and Biotech Researchers Efficient Access to Information on Biotransformations

Chemical Abstracts Service (CAS) is addressing the growing interest in biology-based synthesis by making access to information on enzymatic reactions and other biotransformations easy to find through its SciFinder research tool. A new audience of researchers eager to go beyond traditional synthetic processes has found a wealth of information in the literature and patent records in CAS databases. CAS has demonstrated SciFinder and its biotech applications during recent American Chemical Society national meetings and found substantial interest among researchers in the biotech and pharmaceutical industries.

"CAS has processed decades worth of journal literature and patents containing information on biotransformations--reactions mediated by biological species-- including enzymatic reactions, which our scientists have been analyzing and adding to CAS databases," said CAS Vice President, Editorial Operations, Matthew J. Toussant. "An explosion of interest in using enzymes to synthesize substances more efficiently has made CAS databases and search tools such as SciFinder useful in many hot research areas of industrial biotech."

CAS reaction information extends back to 1840 and among the 11 million reaction records are thousands for biotransformations. Applying such biotransformations to industrial processes can improve cost efficiency and environmental safety, via greener methods. In addition CAS literature databases reference a wealth of research on biological processes relating to drugs, food, materials and energy, among other applications.

Just as yeast has been used since ancient times to induce fermentation for making beer, biological entities and enzymes play a role in many chemical reactions. Applying such biotransformations to industrial processes can improve cost efficiency and environmental safety. For example, biologically important chemicals can exist in

Continued on Page 7

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SciFinder® Continued From Page 6

two molecular forms that are mirror images of each other, with a right-hand and left-hand version. But only one version (or stereoisomer) may be valuable for the intended purposes (medicinal, specialty chemical and others), and isolating it may be difficult and costly using classical organic synthesis. However, a biological entity may produce an enzyme that is naturally selective for the desired molecule. Using such enzymes in biocatalysis can produce high purity substances in the desired quantities. SciFinder can easily lead scientists to information on these innovative chemical processes.

CAS has continuously enhanced SciFinder since its inception and SciFinder 2007 introduces a slate of new options and features to add additional power to the exploration of CAS' extensive information resources. These improvements will allow users to:

Combine answer sets for substances, reactions and references – users will be able to combine a saved answer set with an “active” set of answers in SciFinder, to arrive at a focused set of answers; for example, references for a given research topic can be combined with the results of a saved author search; options to “combine,” “intersect” or “remove” answer sets allow the user to include only the desired references from the saved and active sets;

Export commercial chemical records from CHEMCATS® into Excel – users can move catalog information for commercially available chemicals into spreadsheets for sorting and manipulation.

More information about these and other new features of SciFinder can be found on the CAS web site at <http://www.cas.org>.

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**The SACP and SSP
will not
be meeting in March
due to Pittcon@ 2007 Conference and Expo.**

**The Pittsburgh Conference will be
held in
Chicago, IL
2/25/07 - 3/2/07**

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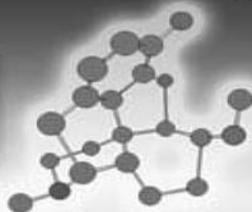
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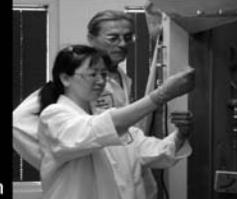


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Section Events

The Pittsburgh Award

The Pittsburgh Award was held on November 30, 2006 at the Pittsburgh Athletic Club. Dr. Dennis Curran was presented with the Award.



Pittsburgh Section Chair Christina Mastromatteo Presents the Pittsburgh Award to Dr. Dennis Curran



Dr. Dennis Curran with past Pittsburgh Award winners present at the dinner. From left to right Krzysztof Matyjaszewski, Jerome Rosenberg, Bodie Douglas, Dennis Curran, Irving Wender, Guy Berry, and David Pratt

WPTAG Co-Sponsors 2006 ACS Keystone Circuit Speakers Presentation

On September 25, 2006, the Western Pennsylvania Technician Affiliate Group (WPTAG) partnered with Bayer Association for Science in Communities (BASIC) to co-sponsor a presentation by the 2006 ACS Keystone Circuit Speakers. In “Using Toys Creatively in Chemistry,” speakers Dr. Mickey Sarquis and Ms. Lynn Hogue, of the Center for Chemistry Education at Miami University in Middletown, Ohio, demonstrated just how interesting science really is and how we can use toys to educate! Over 100 guests were in attendance for the luncheon presentation. Guests included not only members of WPTAG, BASIC and the Pittsburgh Section ACS, but representatives from area corporations, educators and students, as well.



Event Planning Committee with Guest Speakers (left to right) Eric Vidra (BASIC - Communications Chair), Michael Mautino (ACS Committee of Community Activities - Chair), Dr. Mickey Sarquis (Center for Chemistry Education - Miami University) Ms. Lynn Hogue (Center for Chemistry Education - Miami University), Bernice Karp (WPTAG - Chair), Deborah Wallace (BASIC - Chair)



Testing the Experiment Michael Mautino and Lynn Hogue

Section Events

National Chemistry Week Event 2006

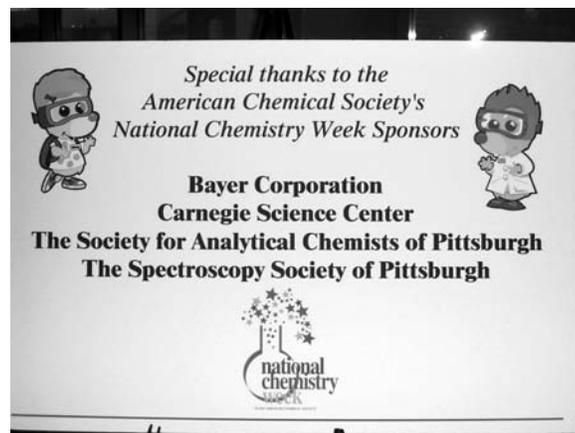
The Pittsburgh Section's 2006 National Chemistry Week (NCW) event was held at the Carnegie Science Center (CSC) on Friday and Saturday, October 27-28, 2006. The theme for the 2006 celebration was "Your Home - It's All Built On Chemistry." A total of 278 volunteers, from twenty-seven groups and organizations, conducted hands-on experiments, activities, and demonstrations. Including PPG Industries Inc.'s demonstration titled "Reaction in Action," there were several theater-style shows presented in the various CSC stages over the two day period. Of the 278 volunteers, 139 (50%) were ACS members or affiliates (students, teachers, technicians, etc.). Total attendance for the two-day event was approximately 3655.



Children participating in one of the many hands on booths.



Blowing bubbles inside!



Many thanks to all those who make the NCW event a success.

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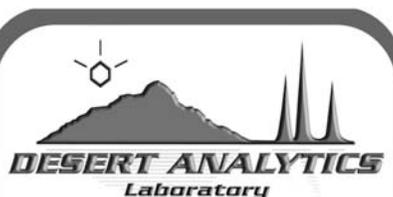
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The Crucible

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Pittsburgh Area Calendar

February

- Sat. 3 **Job Searching for Chemical Professionals**
Ashe Auditorium, University of Pittsburgh
- Mon. 5 **Society for Analytical Chemists of Pittsburgh (SACP)**
Duquesne University, Maurice Falk Hall
"New Chemical Approaches to Environmental Remediation in Soil and Groundwater"
Thomas E. Mallouk, Ph.D., Director, Pennsylvania State University
- Tue. 27 **ACS Pittsburgh Chemists Club**
Duranti's Restaurant
"Biomedical Cellular Modeling and Supercomputing"
Joel R. Stiles, MD, Ph.D., Director, National Resource for Biomedical Supercomputing, Mellon College of Science,
Pittsburgh Supercomputing Center, Carnegie Mellon University

The Crucible

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