



# The Crucible



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

Volume: XCI No.9

May 2006

## ACS Pittsburgh Chemists Club Pittsburgh Section, American Chemical Society

Noon Program  
Tuesday, May 23, 2006

*"The First Fifty, the Next Fifty: ACS Members Ensuring  
the Future of the Chemical Enterprise"*

by

E. Ann Nalley, Ph.D.  
President American Chemical Society

**Duranti's Restaurant**  
128 N. Craig St., Pittsburgh, PA

For reservations, please call Ed Martin by noon, Friday, May 19, 2006 at (724) 335-0904 or e-mail at [esm@icubed.com](mailto:esm@icubed.com).

The chemical enterprise in the United States has grown enormously over the past fifty years, and it is in no small part due to contributions of dedicated chemical professionals, including those recognized as long-standing members of the American Chemical Society.

Although I would like to say that I can set the American Chemical Society and the chemical enterprise on a course toward a positive future, I am not naïve enough to believe that I can accomplish it alone, or that the whole chemical enterprise can be changed in one year. Therefore, I have three focal points for action and activities this year: communicating the value and relationship of basic and applied research; emphasizing the importance of good science and mathematics education at all levels; and recognizing that the most important asset the American Chemical Society has is its members. This talk will highlight contributions to chemistry in the context of those who helped to make it happen, and the commitment of ACS members to ensure that their organization is dynamic and responsive to the needs of the chemical enterprise.

### Biography

Dr. Ann Nalley, 2006 President of the American Chemical Society, is currently a Professor of Chemistry in the Physical Science Department at Cameron University, a position that she has held since 1969. She has held positions as a visiting scientist or professor in the Chemistry Departments at the University of Oklahoma and the University of Texas at Dallas, and the Polymer Science Department at the University of Southern Mississippi. She earned a Bachelor of Science Degree at Northeastern Oklahoma State University, a Master's Degree in Analytical Chemistry at Oklahoma State University, and a Ph.D. in Radiation Chemistry from Texas Woman's University.

She has held every office in the local section of the American Chemical Society and has served on nine national committees and or task forces. She has served as a Councilor for more than 25 years. She had previously served for seven years on the Board of Directors of the American Chemical Society as Director of District V. She served four years on the National Board of the American Institute of Chemists as a Director-At-Large, a term she completed in 1996.

**50 year ACS membership awards will be presented to the following Pittsburgh Section members: Clyde Del Campbell, Eugene P. D. Amico, John Bryce Greenshields, Jack W. Hausser, Chien Ho, John Joseph Kolano, John R. Peffer, Frederick John Shipko, and James C. Vanek.**

## Contents . . .

ACS Pittsburgh Chemists Club	1
<i>"The First Fifty, the Next Fifty: ACS Members Ensuring the Future of the Chemical Enterprise"</i>	
Western Pennsylvania Technician Affiliate Group Celebrating Ten Years of Success	2
Section Members Select 2006 High School Chemistry Winners	3
Polymer Group	3
<i>"Organic Photovoltaic Cells: Advancements in Active Layer Technology"</i>	
Energy Technology Group	4
<i>"Pebble Bed Modular Reactor Project - Generation IV Today"</i>	
2006 Environmental Controls Conference	4
The Society For Analytical Chemists of Pittsburgh and the Pittsburgh Section ACS May Awards Banquet	5
This Month in Chemical History - #1	6
ACS Spring 2006 National Meeting Report - Atlanta GA	7
Invitation for Feedback on the ACS Approval Guidelines	7
This Month in Chemical History - #2	8
Electrons "In Limbo" Seen for First Time	9
Graduate School Recruiters	9
Advertiser's Index	11
Calendar	12

## Western Pennsylvania Technician Affiliate Group Celebrating Ten Years of Success

There was “standing room only” at the Harbors Gardens Building at 1650 Metropolitan Street, on Friday, March 10, as the Western Pennsylvania Technician Affiliate Group (WPTAG) officially celebrated our tenth anniversary. The location, Harbor Gardens, is part of the Bidwell Training Center Complex in Pittsburgh. Bidwell was the site of the first WPTAG meeting back in 1996 and we were very pleased to return to celebrate this important milestone.

The celebration was open to all. Attendees included not only WPTAG members, but members of the Pittsburgh Section ACS, educators, students and representatives from area corporations.

This tenth anniversary celebration was a very important event for our organization and we were pleased to feature three keynote speakers in our program: Ms. Denise Creech, Dr. C. Gordon McCarty and Dr. Lawrence Friedman. Each of our speakers has had an extensive career in academia prior to accepting prominent positions in industry and/or with the American Chemical Society (ACS).

Ms. Creech is the current Director of the ACS Membership Division. Having held this position since 2003, she has focused her efforts on providing vital products and services to the more than 158,000 ACS members. We were honored that Ms. Creech traveled from Washington, D.C. to join us and to speak on “The ACS and You - Benefits from Membership in a Professional Society.” She emphasized the importance of the bond between WPTAG and the ACS.

Dr. C. Gordon McCarty, a fifty year member of the ACS, currently serves on the ACS Board of Directors as Director-At-Large. We were honored that Dr. McCarty traveled from South Carolina for the celebration and most importantly, we are thankful for the commitment made

by Dr. McCarty ten years ago in bringing the concept of a Technician Affiliate Group to Western Pennsylvania. As a direct result of his dedication, our organization was formed and has continued to have a positive impact on the careers of many technicians. Since Dr. McCarty was instrumental in the early development of WPTAG and served as our first

career outlook for technicians by outlining important emerging technologies in the chemical industry.

We were also honored that Mr. Bill Strickland, President and CEO of Manchester Bidwell Corporation, addressed our group. Mr. Strickland focused on the importance of education in pursuing career objectives.

The messages presented by our speakers were positive, encouraging and inspiring. After the meeting, one student said, “I’ve made up my mind. I’m getting all the education I can get.” This student obviously felt quite motivated by what he had heard!

A luncheon reception followed the program. This provided an excellent opportunity for everyone to meet our speakers and to network with peers.



**Keynote Speakers (left to right) - Dr. C. Gordon McCarty, Ms. Denise Creech, Dr. Lawrence Friedman**

ACS Advisor, he described our beginnings in “WPTAG - From a Vision to a Reality.”

Dr. Lawrence Friedman, is a member of the New Technologies Group and Head of University Relations at Bayer MaterialScience LLC. In addition, he currently serves on the Corporation Associates Committee of the ACS. We sincerely appreciate the guidance and support he has provided to us as the current ACS Advisor for WPTAG. In “WPTAG - Focus on the Future,” Dr. Friedman presented an optimistic

WPTAG is proud to provide an environment in which members can increase their technical knowledge, enhance their professional development, expand their networking opportunities and help to promote science in the community. As we reflect on the past ten years, we are grateful for the support and recognition we have received from the ACS, our employers, our families, our friends and our community. As we focus on the future, we realize that there are countless opportunities still ahead of us and we are looking forward to another ten years of continued success!



**2006 WPTAG Executive Committee - Seated (left to right) - A. Wylie, Dr. L. Friedman, S. Rider, M. Mautino, Standing (left to right) - P. Bibb, A. Bushmire, B. Karp, J. Forsythe, Dr. C. G. McCarty, J. Eastman, L. Matz**

*Respectfully submitted by  
Bernice Karp,  
2006 WPTAG Chair*

## Section Members Select 2006 High School Chemistry Winners

Pittsburgh Section ACS members performed a community and professional service function at the seventy-second annual region seven meeting of the Pennsylvania Junior Academy of Science. The event held on Saturday, February 4, 2006, at Franklin Regional High School, Murrysville, is supported by a number of local and national societies, including the American Chemical Society, American Nuclear Society, Carnegie Mellon, Pitt and Duquesne Universities, Society of Women Engineers, SACP, SSP, Carnegie Museum and the Pittsburgh Voyager to name a few.

The Section has selected and presented cash and trophy awards to the students presenting the five best chemistry papers for many years. The students benefit from having professional chemists as judges. Dr. James Manner, 2006 Section Chair, judged the event along with approximately twenty Section members and student affiliates. He expressed the desire to have more ACS members take part. "This might

be an enjoyable way for retired members to stay active" he said, "since they are already involved in encouraging the elementary students through citations



**High School Chemistry Contest Winners - Front from left to right: Ankur Goyal, Marc Roberge, Kerrick Dando Back Row from left to right: Eva Gillis-Buck, Ally Nagy**

sponsored by the Pittsburgh Chemists Club/Retired Chemists Group."

Former Pittsburgh ACS Section Chair, Kurt C. Schreiber

managed the Pennsylvania Science Talent Search and awarded scholarships to deserving young local scientists.

The 2006 ACS chemistry award winners are: Ally Nagy (Oakland Catholic HS), Eva Gillis-Buck (Ellis School), Kerrick Dando (Franklin Regional HS), Ankur Goyal (Fox Chapel HS), and Marc Roberge (Central Catholic HS).

*Submitted by Ted Weisman*

## POLYMER GROUP Pittsburgh Section American Chemical Society

**Wednesday  
May 10, 2006**

**Duranti's Restaurant  
128 N. Craig St.**

Social Hour (cash bar) 5:30 pm  
Dinner 6:30 pm  
Technical Presentation 7:30 pm

### ***"Organic Photovoltaic Cells: Advancements in Active Layer Technology"***

**Elena Sheina  
Plextronics, Inc.**

The talk will focus on the use of Inherently Conductive Polymers as a practical source of renewable energy that will significantly reduce the world's dependence upon fossil fuels. Organic photovoltaic (OPV) cells based on organic semiconductors offer significant advantages over their inorganic counterparts due to improved fabrication and manufacturing processes that would result in low-cost devices. Plexcore™ OPV technology utilizes regioregular polythiophenes as the light harvesting p-type semiconductor used in organic solar cell active layers. Efforts toward improving OPV efficiencies to commercial levels through polymer design will be discussed.

**For dinner reservations:** Please contact Nick Tsarevsky (Tel: 412-268-1872; e-mail: nvt@cmu.edu) no later than Tuesday, May 9, 2006. The cost of dinner is \$19.00 per person; discount rate of \$11.00 for retirees; no charge for students. *All are welcome!*

## A good vacuum system

### needs a great vacuum trap:

**Posi-Trap** positive flow  
vacuum inlet traps!

- No "blow-by". . . **ever!**
- Filter elements matched to **your** application.
- **Easy** cleaning and changing.

**When you want the best, you want MV Products.**



**PRODUCTS**

*A Division of Mass-Vac, Inc.*

247 Rangeway Road ■ PO Box 359 ■ North Billerica, MA 01862  
978 667 2393 Fax 978 671 0014 sales@massvac.com www.massvac.com

**ENERGY TECHNOLOGY GROUP  
Pittsburgh Section  
American Chemical Society  
jointly with  
Pittsburgh Section, American Nuclear Society**

**Thursday, May 18, 2006**

**“Pebble Bed Modular Reactor  
Project - Generation IV Today!”**

by  
Dr. Regis A. Matzie  
Executive Vice President & Chief Technology Officer  
Westinghouse Electric Co.

**Wilkins Elks Lodge #577  
Turtle Creek, PA, 412-823-6300**

6:00 pm	Networking-Cash Bar
6:30 pm	Dinner
7:30 pm	Presentation

**RSVP:** The buffet dinner cost is \$20 per person. For reservations, call Christina at 412-386-4484 (for Tom Sarkus) by Friday, May 12. Please indicate whether you will be attending the dinner & presentation, or just the presentation.

**Abstract:**

The Pebble Bed Modular Reactor (PBMR) being developed in South Africa is a Generation IV design in all respects, except that it will be available decades before the targets published by the Generation IV International Forum (GIF). In this presentation, the PBMR design will be reviewed and the status of design development and project implementation, including the progress in licensing PBMR in both South Africa and the United States, will be summarized. The international supply team for the demonstration plant will be identified as well as the development and verification facilities now under construction or in planning.

**Biography**

Dr. Regis A. Matzie was appointed to his current Westinghouse position in October 2001 and is responsible for all Westinghouse research & development undertakings and advanced nuclear plant development. Dr. Matzie was elected to the Board of PBMR Pty Ltd in May 2001, and has chaired the Board's Technical Committee since May 2001. Dr. Matzie was also the executive in charge of Westinghouse replacement steam generator projects and dry spent-fuel-canister fabrication projects. He was previously vice president of nuclear systems for ABB Combustion Engineering Nuclear Power. During his 25 years with ABB CE, Dr. Matzie held various technical and management positions, including vice president of nuclear engineering; vice president of nuclear systems development; director of advanced water reactor projects; manager of reactor engineering; and manager of analog plants.

**Directions:** From Monroeville, take 376 (Parkway) West to the Churchill Exit (10A on the left side of the road). At the light, turn left onto 130 East (Brown Avenue/Beulah Road). From Pittsburgh, take 376 (Parkway) East to the Churchill Exit (10A). Make the right at the stop sign at the bottom of the exit. When you come to the light, make a left onto 130 East. Wilkins Elks Lodge is approximately one mile down the road on the left.

**2006 Environmental  
Controls Conference**

The U.S. Department of Energy's National Energy Technology Laboratory (NETL) will sponsor an Environmental Controls Conference May 16-18, 2006, at the Holiday Inn Select (soon to be renamed Crowne Plaza) Hotel, Pittsburgh, PA.

The 2006 Environmental Controls Conference consists of two sessions. Session 1, Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR) for NO<sub>x</sub> Control, will provide a forum for attendees to address various issues, including emissions regulations, commercial implementation of SCR and SNCR for both coal and non-coal applications, and chemical reagent considerations. SCR and SNCR are the two major post-combustion technologies capable of meeting NO<sub>x</sub> emissions standards required by Title I of the Clean Air Act Amendments of 1990. Session 1 is the only conference in the world that focuses solely on this topic, and is recognized by many attendees as the premier meeting of its type each year.

Session 2, Techniques for Managing Sulfur Trioxide (SO<sub>3</sub>), will focus on problems associated with SO<sub>3</sub> formation, measurement and impacts on process and control equipment utilized in both coal- and oil-fired boilers.

The main objective of the 2006 Conference is to bring together a wide range of representatives of the power generation industry, the research community, and governmental regulatory agencies to learn about the latest developments on these subjects, along with projections of future activities.

For more information regarding the conference please visit the NETL website at [www.netl.doe.gov](http://www.netl.doe.gov) and click on the events calendar or contact Pamela Stanley by phone at 304-285-4750 or by e-mail at [pamela.Stanley@netl.gov](mailto:pamela.Stanley@netl.gov).



THE SOCIETY FOR ANALYTICAL CHEMISTS  
OF PITTSBURGH

*and*

THE PITTSBURGH SECTION,  
AMERICAN CHEMICAL SOCIETY

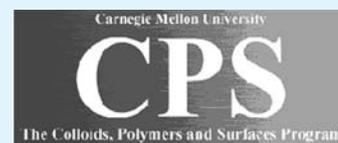
***MAY AWARDS BANQUET***

**MONDAY, MAY 22, 2006**

Duquesne University  
Student Union Ballroom  
Fourth Floor  
5:30 P.M. - Social Hour  
6:30 P.M. - Dinner

Dinner reservations: Please e-mail Bill Straub (straub@pittcon.org), SACP Arrangement Chair by Monday, May 15, 2006. Bill's preference for reservations is an e-mail. Should you not have e-mail, please call 412-372-8312. Dinner will cost \$15.00 and checks can be made payable to the SACP.

**Carnegie Mellon**



**PART-TIME  
GRADUATE  
DEGREE**

This interdisciplinary program of part-time graduate study (currently in its 33rd year) leads to a Master of Science degree in Colloids, Polymers and Surfaces (CPS) offered jointly by the Engineering and Science Colleges at Carnegie Mellon University. Course work is relevant to many industries, as chemical product manufacture and process development often require applications involving complex fluids that include nanoparticles, macromolecules and interfaces. Examples include industries working with nanotechnology, coatings and pigments, pharmaceuticals, surfactant-based products, food science, environmental science, polymers/advanced materials and biomaterials. Participating faculty are drawn mainly from the Department of Chemical Engineering and the Department of Chemistry.

Applications for Fall 2006 enrollment are now being taken. Classes begin August 28, 2006, and new students may enroll in the entry-level course, Physical Chemistry of Macromolecules.

For additional information, contact:  
Dr. Annette M. Jacobson, Director  
CPS Program 1107 Doherty Hall  
Carnegie Mellon University  
Pittsburgh, PA 15213  
Phone: (412)268-2244  
E-mail: jacobson@andrew.cmu.edu  
Website: [www.cheme.cmu.edu/education/mscpcatalog.htm](http://www.cheme.cmu.edu/education/mscpcatalog.htm)

***We Focus on Doing Chemistry!***

- FDA Inspected
- cGMP Synthesis
- Controlled Substances
- Custom Synthesis
- Small Lots Manufacturing
- Polymer Chemistry
- Process Development

**Chemo Dynamics, LP**

3 Crossman Road South  
Sayreville, New Jersey 08872  
Phone: 732-721-4700 • Fax: 732-721-6835  
[www.chemodynamics.com](http://www.chemodynamics.com)  
E-mail: [info@chemodynamics.com](mailto:info@chemodynamics.com)  
John Arnett, Ph.D., Director of Operations

**This Month in Chemical History - #1**  
**Harold Goldwhite, California State University, Los Angeles**  
**hgoldwh@calstatela.edu**

***Prepared for SCALACS, the Journal of the Southern California, Orange County, and San Geronio Sections of the American Chemical Society***

A few years ago I obtained a number of volumes of a series “The Mallinckrodt Collection of Food Classics” published by that manufacturer in the mid-1960s. Most of the books are facsimile reprints of early classic cookbooks, but Volume II is different. It is a facsimile of an 1820 Philadelphia publication reprinting rapidly an English publication of the same year. This influential book, by the chemist Fredrick Accum, deserves to have its complete title, in the early 19<sup>th</sup> century style given here: “A Treatise on Adulterations of Food and Culinary Poisons. Exhibiting The Fraudulent Sophistications of bread, beer, wine, spirituous liquors, tea, coffee, cream, confectionery, vinegar, mustard, pepper, cheese, olive oil, pickles. And other articles employed in domestic economy. And methods of detecting them.”

So who was Frerick Accum, and why this book? For the following biographical sketch I am greatly indebted to a substantial article on Accum by Lawson Cockroft which appears on the website of the Royal Society of Chemistry’s Library and Information Service. Accum was born in Germany on March 29, 1769. His father was a merchant and soap-maker. After beginning his education at the local gymnasium Fredrick was apprenticed to a local pharmacist and became acquainted with the family of William Brande, who provided medicines to the court of George III in London. Accum moved to London in 1793, worked in Brande’s laboratory, and extended his education by attending lectures. He got to know William Nicholson who edited a well-respected chemical journal (Nicholson’s Journal) and helped to translate foreign articles for inclusion. In 1798 Accum

began to contribute a series of articles to the journal on adulteration of medical preparations.

Accum set up his own establishment in 1800 as a supplier of chemicals and equipment and developed considerable expertise in analytical chemistry to ensure the quality of his products. For a year he assisted Humphry Davy as a demonstrator at the Royal Institution. Accum’s first book, “System of Theoretical and Practical Chemistry” was published in 1803 and was well subscribed, and he began to offer the only laboratory course in experimental chemistry available in London at that time. Accum’s American pupils included James Dana, the famous mineralogist, and Benjamin Silliman, first Professor of Chemistry at Yale. Not surprisingly Accum’s equipment and chemicals found their way to the initial Chemistry Departments established in the United States.

Accum became interested in the novel prospect of providing coal gas commercially for heating and lighting and testified to government committees on the subject. By 1815 some fifteen miles of London streets were gas-lit, and Accum, always alert to new opportunities, published a book on coal gas manufacture. In 1817 he published a book “Chemical Amusement” describing experiments suitable for the drawing room, and created “Chests of Chemical Amusement” containing the necessary chemicals and equipment and selling for ten to eighteen guineas, a lot of money at the time.

By 1820 Accum was ready to publish his magnum opus mentioned above and concerned with adulterations of food products. It was reviewed in all the leading journals – not the chemical journals but the popular literary magazines such as Blackwood’s and the

Edinburgh Review. The first thousand copies sold out in under a month and a second edition appeared immediately. The book, and Accum, were vigorously attacked by food and drink manufacturers who alleged that they were unfairly smeared by the work. Meanwhile Accum was accused of mutilating books in the collection of the Royal Institution, and a warrant for a search of his rooms led to the discovery of some 30 pages removed from books in the Royal Institution’s library. Accum was released on bail but never came to trial. Badly depressed he left England, forfeited his bail, and returned to Germany.

He soon obtained two posts related to applied chemistry in Berlin. He published in 1826 his only book in German on the properties of building materials. While he continued to publish in the journal of the Berlin Royal Academy of Sciences his articles were submitted either anonymously or under the rather transparent pseudonym of Mucca. New editions of his treatise on adulteration appeared in England without his name on the title page. And it was not until 1860 that food regulation was written into law in England in the Adulteration Act. But Accum had died in Berlin in June 1838.

In my next column I will look at the contents of Accum’s Treatise.

***Part 2 of this discussion can be found on page 9.***

***ACS Cut and Paste March/April 2006***

# ACS Spring 2006 National Meeting Report - Atlanta, GA

Three of our ACS Pittsburgh Section Councilors were in attendance at Atlanta. The Alternate Councilors were not available to attend the meeting.

The meeting attracted over 12,400 attendees and featured over 6000 scientific presentations and an exposition of 455 booths.

Councilors selected the following candidates for President-Elect for 2007:

- Bruce E. Bursten
- Bassam Z. Shakhshiri

The Committee on Meetings & Expositions reported that the total meeting registration was 12,546. Of these, 6,323 were regular registrations, 1,288 were exhibitors, 4,158 were students, 413 were exposition only, and 364 guests. The exposition had 262 companies represented in 455 booths.

In Atlanta, 1,247 job seekers registered with the NECH with 1,180 interviews scheduled for 197 positions.

Membership in the American Chemical Society was 158,422 as of December 31, 2005. This is an increase in membership reversing a 4-year downward trend in Society membership. The membership retention number remained stable at 92.4%.

The Committee on Nominations and Elections announced the selection of the following candidates for Directors-at-Large for a 2007-2009 term: William H. Breazeale, Jr., Dennis Chamot, Peter K. Dorhout, Paul R. Jones, Valerie J. Kuck, and Dorothy J. Phillips. The election of three Directors-at-Large will be conducted in the fall. Two candidates will fill the 2007-2009 term, and one will fill a two-year vacancy for 2007-2008 created by the resignation of Director-at-Large James D. Burke (effective December 31, 2006). Ballots will be mailed to the Council on or before October 10.

The Society ended 2005 with a net contribution from operations of \$11.6 million, which was \$9.1 million favorable to the approved budget. The favorable variance was primarily attributable to higher-than-budgeted print and electronic information services revenue and investment income, as well as expense savings from staff vacan-

cies and reductions in information technology spending. The Society also realized \$21.0 million in investments gains. In total, unrestricted net assets increased just over \$26 million in 2005 to \$211 million, and the Society ended 2005 in full compliance with the Board-established financial guidelines.

The Council voted to set the member dues for 2007 at the fully escalated rate of \$132.

The Council also voted to recommend to the Board of Directors that the spring meeting for 2015 be held in Denver, Colorado, March 22-26; and that the fall meeting be held in Boston, MA, August 16-20. The Council also voted to recommend that the 2016 spring meeting to be held on March 13-17 in San Diego, CA; and the fall meeting in 2016 to be held in Philadelphia, PA on August 21-25.

A special discussion was held at the Council Meeting that focused on membership - specifically, the requirements for ACS membership, and whether they should be made more or less restrictive, or kept the same.

Many ACS committees and councilor caucuses discussed and/or provided input into three key Society initiatives:

1. The Society's new vision statement: Improving people's lives through the transforming power of chemistry.
2. The Board-Council Policy Committee Governance Review Task Force which developed a framework that emphasized five key elements of the Society's governance, which are: membership, geographical organization, disciplinary organization, governance structure, and governance operations.
3. A Program Review Advisory Group (PRAG) has been established to assist the Committee on Budget and Finance in reviewing all programs of the Society on periodic and regular basis.

*Respectfully submitted,  
Pittsburgh Section Councilors'*

Richard S. Danchik (Author)  
Michael Mautino  
Theodore Weismann  
Mildred Perry

## Invitation for Feedback on the ACS Approval Guidelines

The ACS Committee on Professional Training (CPT) is undertaking a major revision of the ACS Guidelines for approval of bachelor's degree programs in chemistry. The goals of revising the ACS guidelines include:

- Simplifying the ACS guidelines for approval of chemistry programs
- Allowing greater flexibility for departments to develop certified degree tracks
- Encouraging department-initiated innovation and curriculum improvement
- Providing faculty and infrastructure requirements that support excellent chemistry programs.

The overview of the proposed revisions to the ACS guidelines (link) that CPT is considering can be accessed from the CPT website at [www.chemistry.org/education/cpt](http://www.chemistry.org/education/cpt).

CPT invites you and your department to respond to these proposed changes by June 1, 2006, and thereby contribute to the ACS guidelines revision process. Please send comments to CPT by e-mail to [cpt@acs.org](mailto:cpt@acs.org) with a subject of "ACS Guidelines Revision."

*ACS Cut and Paste March/April 2006*

### BOOST OUR RAVINGS

When you tell our advertisers that you saw their ads here they have more confidence in our newsletter's viability as an advertising medium. They advertise more. This supports our many activities.

**This Month in Chemical History - #2**  
**Harold Goldwhite, California State University, Los Angeles**  
**hgoldwh@calstatela.edu**

*Prepared for SCALACS, the Journal of the Southern California, Orange County, and San Geronio Sections of the American Chemical Society*

In my last column I gave a short biographical sketch of the life and career of Fredrick Accum, a nineteenth century chemist whose most famous book, published first in 1820 was "A Treatise on Adulterations of Food" to give its shortened title. In this column I will examine the scope and intent of this work. Let me quote from the Preface: "Every person is aware that bread, beer, wine, and other substances employed in domestic economy are frequently met with in adulterated state....To such perfection of ingenuity has the system of counterfeiting and adulterating various commodities arrived in this country, that spurious articles are everywhere to be found in the market .....But of all possible nefarious traffic and deception, practiced by mercenary dealers, that of adulterating the articles intended for human food with ingredients deleterious to health, is the most criminal, and, in the mind of every honest man, must excite feelings of regret and disgust."

After an introduction Accum devotes several sections to an examination of water from different sources, and describes the harmful effects of keeping water in lead tanks. Adulteration of wine occupies 23 pages; of bread 15, and of beer no less than 49 pages. We tend to forget, unless we are familiar with domestic practices in the early nineteenth century, or have read a lot of fiction from that period, that beer played much the same part in the everyday diet then that water does in our times. Reliable supplies of drinking water were not available everywhere in England and milk was not at all a popular beverage. Small beer, also called table beer, of low alcoholic content

was a safe drink that was to be found on many tables at all meals, including breakfast. Of course stronger beers were also popular.

There were laws governing the ingredients to be used in making beer, which included only malt, hops, and water, but those laws were often violated. Accum shows that the bitter and intoxicating herb *cocculus indicus*, which contains poisonous picrotoxin, was often used in place of part of the expensive ingredient hops. A certain Mr. Jackson, during the recent wars with Napoleonic France, "fell upon the idea of brewing beer from various drugs without any malt or hops." Mr. Jackson earned his money not by brewing beer himself, but by teaching his recipes to brewers for a substantial fee and supplying them with the necessary materials. Accum's book is noteworthy for giving chapter and verse for such offenses. His "List of Druggists and Grocers, prosecuted and convicted from 1812 to 1819, for supplying illegal Ingredients to Brewers for adulterating Beer" includes 28 names, and indicates penalties of fines ranging from 20 pounds (for selling liquorice to a brewer for darkening beer) up to 500 pounds for selling unspecified adulterating ingredients. Accum makes some interesting observations on the alcohol content of beers. Samples of brown stout obtained directly from reputable brewers (Barclay, Perkins; Truman, Hanbury; Meux – some of those breweries are still in the business) averaged 7.25% of alcohol. Porter, from the same brewers averaged 5.25%. When beers of the same name, allegedly from the same brewers, were obtained from retailers in public houses the brown stout averaged 6.50% alcohol and the porter 4.50%. Accum concludes that the publicans were illegally mixing the cheaper table beer with their stronger brews to increase their profits.

Apart from *cocculus indicus* the list of substances used to adulterate beer makes troubling reading. It includes quassia wood shavings, another bitter substitute for hops; iron sulphate plus molasses to improve the beer's head; peppers; wormwood; and many other spices and coloring matters. Accum lists the simple tests which can detect the presence of many of these deleterious substances in beer.

Tea was already an important beverage in Accum's time. His chapter on "Counterfeit Tea-Leaves" also makes troubling reading. A number of cases came to trial in early 1818. Edmund Rhodes was convicted of counterfeiting tea with a mixture of sloe leaves, ash leaves, elder leaves, and the leaves of other trees. He was fined 500 pounds. Mr. Palmer's falsification was more dastardly. This grocer concocted black tea by using logwood extracts to dye privet leaves; but his green tea made from sloe and thorn leaves was colored by the action of verdigris, a green copper pigment and noticeably toxic. He was fined 840 pounds.

Accum was a pioneer in the detection of adulteration in foods and drugs. Thanks to efforts by him and his fellow chemists, legislation to help prosecute those involved in such adulteration became part of our legal codes in the second half of the nineteenth century.

*ACS Cut and Paste March/April 2006*

## Electrons 'In Limbo' Seen for First Time

*Two recent papers by Pitt physicist offer a deeper understanding of how electrons behave on surfaces, with applications in electronics and energy.*

PITTSBURGH—Hrvoje Petek, University of Pittsburgh professor of physics and codirector of Pitt's Gertrude E. and John M. Petersen Institute of NanoScience and Engineering (PINSE), has published two papers in recent weeks, one in the current issue of *Science*, that illuminate how electrons behave on various surfaces.

In the first paper, Petek and Miroslav Nyvlt of Charles University in Prague explored the properties of metals under intense light—a situation “where the classical physics of electron emission from metals emerges from its quantum roots,” says Petek. They found that when light of a certain energy and intensity is shone onto a metal surface, a few electrons in the metal become stuck on the surface (that is, they are neither emitted from nor reabsorbed into the metal). As Petek puts it, the electrons are “in limbo.”

These electrons undergo the process of “total internal reflection”—a process well known for light, but observed by Petek and Nyvlt for the first time in electrons.

These findings, published in the March 3 issue of *Physical Review Letters* (PRL), could lead to the ability to transmit electrons, without scattering, over larger distances than previously possible. For example, electrons on the surface of carbon nanotubes could be excited to make “very small and very fast” transistors, Petek says.

“We anticipate that these elusive electrons will provide exquisite probes for how photons and electrons interact with metal surfaces,” he adds.

In Petek's second paper, published in the current issue of *Science*, he and Pitt Professor of Chemistry Kenneth Jordan, a PINSE researcher, make new progress toward extracting hydrogen from water using titanium dioxide as a catalyst.

In a May 2005 *Science* paper, Petek and Jordan presented their findings on the properties of water on the surface of titanium

dioxide. In their current experiment, they used methanol instead of water, because they discovered that excited electrons last longer in methanol than in water, allowing chemical reactions to be observed.

This research shows how protons in methanol molecules move in such a way that they control the reabsorption of electrons into the titanium dioxide. Such motion, correlated between protons and electrons, is needed to convert light into chemical energy on solid surfaces, as well as by light-harvesting proteins.

PINSE is an integrated, multidisciplinary organization that brings coherence to the University's research efforts and resources in the fields of nanoscale science and engineering. More information about PINSE can be found at [www.nano.pitt.edu](http://www.nano.pitt.edu).

The work for the PRL paper was performed at the Max Planck Institute of Microstructure Physics in Halle, Germany, where Petek was an Alexander von Humboldt Senior Scholar and Nyvlt was the group leader. Other authors on the paper are Francesco Bisio, now at the University of Genoa; Jirka Franta, now at Charles University; and Jurgen Kirschner, director of the Max Planck Institute.

That work was supported by the Alexander von Humboldt Foundation, the U.S. National Science Foundation, the Italian National Research Council, and the Czech Ministry of Education.

In addition to Petek and Jordan, authors on the *Science* paper are graduate students Bin Li and Jin Zhao and postdoctoral fellow Ken Onda, all of Pitt's Department of Physics and Astronomy, and Jinlong Yang of the University of Science and Technology of China. The work was supported by the U.S. Department of Defense Multidisciplinary University Research Initiative program, the New Energy Development Organization of Japan, and the National Science Foundations of the United States and China.

*Submitted by The University  
of Pittsburgh*

### Graduate School Recruiters

Would you like to increase the pool of applicants to your graduate programs? Then register for the ACS graduate school recruiting breakfast and ice cream social for undergraduate chemistry students! The ice cream social will be held on Sunday, September 10, 2006 from 5:00 – 6:30 p.m. and the breakfast will be held Monday, September 11, 2006, from 9:00–11:00 a.m. in San Francisco, CA as part of the 232nd ACS National Meeting.

The graduate school recruiting morning tea and breakfast offers:

- Representatives of schools the opportunity to meet qualified graduate school candidates.
- Students a chance to discuss their educational plans informally and intimately with faculty, staff, and students from participating institutions.

**Registration ends August 8, 2006.**

For more information, contact Adam M. Boyd at 1-800-227-5558, ext. 6188 or e-mail [a\\_boyd@acs.org](mailto:a_boyd@acs.org).

*ACS Cut and Paste April/May 2006*

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](http://membership.acs.org/P/Pitt)

# Business Directory

## Services

### Chemical Analysis Services

- Materials Identification/Deformation
- Competitive Product Analysis
- Defects / Failure Analysis
- Polymer Analysis and Testing

ISO 9001  
Certified



**CHEMIR**

Analytical Services

(800) 659-7659

chemir.com

## Services

### PROTECT

Your Expensive Lab Work With Research and Development Record Books

#### STOCK RECORD BOOKS

B50D --- Fifty pages and fifty duplicates  
1/4 inch sqs. on right pages

B100P --- 100 - 1/4 inch sqs. on right pages  
100 - 10 sqs. per inch on left pages.

B200P --- 208 1/4 inch sqs. on right and left pages  
B200PH - 208 horizontally lined right and left pages.

Books have instruction and TOC's. Page size 11 x 8 1/2.  
Hard extension brown cloth covers. Pages open flat.

\$15.00 EACH, FOB Chicago

#### CUSTOM MADE BOOKS TO ORDER

Scientific Bindery Productions  
2612-18 W. Nelson, Chicago, IL 60618  
Phone: 773-267-1129 Fax: 773-267-1218

## Services

### Micron Analytical Services

COMPLETE MATERIALS CHARACTERIZATION  
MORPHOLOGY CHEMISTRY STRUCTURE

3815 Lancaster Pike Wilmington DE. 19805

Voice 302-998-1184, Fax 302-998-1836

E-Mail micronanalytical@compuserve.com



SOCIETY FOR  
ANALYTICAL CHEMISTS  
OF PITTSBURGH

Calling New Members

Dues Only \$5.00/year, Call Valarie Daugherty  
412-825-3220 Ext. 204 Right Now!

### SPECTROSCOPY SOCIETY OF PITTSBURGH



We're beating the drum for new members

Dues Only \$5.00/year

Call Jennifer Cassidy Right Now!

412-825-3220 ext 218

### Polymer Problems?

Complete Polymer Deformation  
Good vs. Bad Comparison  
Expert Witness

Testing Services  
DSC, TGA, IR, UV-Vis, GC, HPLC, NMR,  
Light Scattering, GPC/SEC, MW, MWD, Viscometry,  
Mass Spec.

**RUSH SERVICE!**

(508) 966-1301  
jordiflp@aol.com



### Specialized Analytical Testing

**INDSPEC** Chemical Corporation

- Chromatography
- Absorption Spectroscopy
- Chemical Analysis
- Physical Measurement
- Thermal Analysis

For further information, please contact the Manager  
Analytical Testing Services Harmarville Technical Center  
412-826-3666, E: Barbara\_Buchner@oxy.com

Rapid Results • Quality • Accuracy • Competitive Pricing



## Robertson Microlit Laboratories

- Elemental CHN, S, X, Analysis - same day service
- Metals by ICP-OES, ICP-MS, A/A
- FTIR, UV/VIS Spectroscopy
- Ion Chromatography
- Bioavailability
- Polarimetry
- DSC
- KF Aquametry, Titrimetry

P. O. Box 927 • 29 Samson Avenue • Madison, NJ 07940

Tel: (973) 966-6668 • Fax (973) 966-0136

www.robertson-microlit.com • email:results@robertsonmicrolit.com

FDA Inspected

## SCHWARZKOPF Microanalytical Laboratory

Elemental & Trace Analysis  
Organics, Inorganics  
Organometallics  
Metals by AA & Graphic Furnace  
Functional Grps. - Mol. Wt.  
Calorimetry  
Total S. F. Halogens TOX  
Coneg Testing Custom Analysis

56-19 37th Ave. Woodside, N.Y. 11377  
(718) 429-6248

schwarzkopfmicro@aol.com

## Analytical Services

Surface Analysis (AFM, ESCA, Auger, SIMS)

AA/ICP/DCP

Classical Analysis

IR/Near IR/UV/Vis/Raman

NMR (Liquids, Solids, LC)

MS (Probe, GC, LC, MS/MS, High Res)

Chromatography (GC, HPLC, GPC, IC)



TEM/SEM/EMP

Optical Microscopy

Thermal Analysis

X-Ray (XRF, XRD)

Contact Timothy Flood

(724) 325-5163 or ppglabs@ppg.com



## DESERT ANALYTICS

LABORATORY

- CHNOSP Halogens
- Metals by AA / ICP
- Ion Chromatography
- Trace Analysis
- Coal/Petroleum

Fast, Reliable Service

No Charge for Phone/Fax Results

P.O. Box 41838 245 S. Plumer, #24

Tucson, AZ 85717 Tucson, AZ 85719

Fax 520-623-9218 Phone 520-623-3381

Web: desertanalytics.com

E-mail: thelab@desertanalytics.com

We Accept: VISA MasterCard American Express

ANALYSIS FOR THE CHEMICAL ELEMENTS

# Directory

## Services

### WANT MORE ARTICLES

When you tell our advertisers that you saw their ads here they have more confidence in our newsletter's viability as an advertising medium. They advertise more. This supports our many activities.

## Career Opportunities

### EMPLOYMENT

*The Crucible will accept at no charge,*

#### POSITION WANTED ADS

*from unemployed ACS members*

#### Contact:

Traci Johnsen

124 Moffett Run Rd.

Aliquippa, PA 15001

724-378-9334

e-mail: [tracijohnsen@comcast.net](mailto:tracijohnsen@comcast.net)

## PITTSBURGH SECTION OFFICERS

### Chair:

James Manner

125 Oak Pointe Dr.

Monroeville, PA 15146

412-372-6390

[manner@peoplepc.com](mailto:manner@peoplepc.com)

### Chair-Elect

Christina Mastromatteo

PPG Industries

440 College Park Dr.

Monroeville, PA 15146

724/325-5318

[mastromatteo@pittcon.org](mailto:mastromatteo@pittcon.org)

### Secretary

Leone Hermans-Blackburn

Bayer Polymers

100 Bayer Rd.

Pittsburgh, PA 15205

412-777-7509

[leone.hermans-blackburn@bayerbms.com](mailto:leone.hermans-blackburn@bayerbms.com)

### Treasurer

Peg Kendi

100 Bayer Rd.

Pittsburgh, PA 15205

412-777-3919

[peg.kendi@bayerbms.com](mailto:peg.kendi@bayerbms.com)

## Position Wanted

Chemist/MBA seeks quality assurance position in the PA/OH/WV area.

#### Contact:

Jonathan Stiffy

203 Locust Street

Bentleyville, PA 15314

Email: [jstiffy81@yahoo.com](mailto:jstiffy81@yahoo.com)

Phone: 724-263-0483

## The Crucible

Material must be received by the 1st of the month prior to publication for inclusion in The Crucible. This rule will be enforced in order to distribute The Crucible to readers in a timely manner (before the 1st day of every publication month).

The Crucible is published monthly, August through May. Circulation, 3,000 copies per month. Subscription price, six dollars per year. All statements and opinions expressed herein are those of the editors or contributors and do not necessarily reflect the position of the Pittsburgh Section.

### Editor

Traci Johnsen

124 Moffett Run Rd.

Aliquippa, PA 15001

Phone: 724-378-9334

Fax: 724-378-9334

[tracijohnsen@comcast.net](mailto:tracijohnsen@comcast.net)

### Advertising Editor

Vince Gale

MBO Services

P.O. Box 1150

Marshfield, MA 02050

Phone: 781-837-0424

Fax: 781-837-1453

[cust-svc@adelphia.net](mailto:cust-svc@adelphia.net)

## Career Opportunities

### PROMOTE YOUR PRODUCTS AND SERVICES • ADVERTISE IN THE CRUCIBLE

*The Crucible* readership is greater Pittsburgh's largest source for chemical and biochemical buyers. *The Crucible* reaches more than 3,000 readers each month. It has been estimated that these buyers annually purchase more than \$150,000,000 of:

- EQUIPMENT
- SUPPLIES
- CONSULTING SERVICES

Placing an advertisement in *The Crucible* is the lowest cost method of reaching this select audience.

**For further information and other options for promoting your company's products and services visit:**

**[www.mboservices.net](http://www.mboservices.net)**

## ADVERTISERS INDEX

Carnegie Mellon University	5
Chemir Analytical Services	10
Chemo Dynamics LP	5
Desert Analytics	10
INDSPEC Chemical Corporation	10
Jordi FLP	10
MASS VAC, Inc.	3
Micron inc.	10
PPG	10
Robertson Microlit Laboratories	10
Schwarzkopf Microanalytical	10
Scientific Bindery Productions	10
Society for Analytical Chemists of Pittsburgh	10
Spectroscopy Society of Pittsburgh	10

# Pittsburgh Area Calendar

## May

- Wed. 10 **Polymer Group**  
Duranti's Restaurant  
*"Organic Photovoltaic Cells: Advancements in Active Layer Technology"*  
Elena Sheina, Plextronics, Inc.
- Thurs. 18 **Energy Technology Group jointly with the Pittsburgh Section, American Nuclear Society**  
Wilkins Elks Lodge #577  
*"Pebble Bed Modular Reactor Project - Generation IV Today"*  
Dr. Regis A. Matzie, Executive Vice President and Chief Technological Officer, Westinghouse Electric Company
- Mon. 22 **Society for Analytical Chemists of Pittsburgh (SACP) and the Pittsburgh Section ACS**  
Awards Banquet  
Duquesne University, Student Union Ballroom
- Tue. 23 **ACS Pittsburgh Chemists Club**  
Duranti's Restaurant  
*"The First Fifty, the Next Fifty: ACS Members Ensuring the Future of the Chemical Enterprise"*  
E. Ann Nalley, PhD., President American Chemical Society

## The Crucible

*A newsletter of the Pittsburgh Section of the American Chemical Society*  
124 Moffett Run Rd.  
Aliquippa, PA 15001

NON-PROFIT ORG.  
U. S. POSTAGE

PAID

PITTSBURGH, PA  
Permit No. 196

### Change of Address

If you move, notify the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036.

To avoid interruption in delivery of your CRUCIBLE, please send your new address to Traci Johnsen, 124 Moffett Run Rd., Aliquippa, PA 15001. Allow two months for the change to become effective.