



# The Crucible

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

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## Dr. C. Gordon McCarty Selected as Recipient of the 2003 Pittsburgh Award



Established in 1933, the Pittsburgh Award is designed to recognize and honor distinguished service to chemistry in the Pittsburgh community. The Pittsburgh Award Committee is pleased to announce that Dr. C. Gordon McCarty has been selected as the recipient of the 2003 Pittsburgh Award. The award recognizes contributions toward increasing chemical knowledge, promoting industry, benefiting humanity or advancing

the Pittsburgh Section. The award dinner will be part of the Central Regional Meeting on Tuesday, October 21, 2003.

Dr. McCarty received his B.S. and M.S. degrees in Chemistry from the University of Wichita and his Ph.D. degree in Physical-Organic Chemistry from the University of Illinois in Champaign-Urbana. After a year as a NSF Postdoctoral Fellow at the University of Colorado, he joined the faculty of the Chemistry Department at West Virginia University in Morgantown in 1964 and rose through the ranks to become Professor of Chemistry several years before he left academia for industry in 1980. He joined Mobay Chemical Company in New Martinsville, West Virginia and later was transferred from there to the Mobay Corporate Headquarters in Pittsburgh. He was with the company there, as it became Bayer USA, Miles, Inc. and finally Bayer Corporation. In 1999, he retired from Bayer as the Manager of University Relations and moved in the year 2000 to Dataw Island, SC where he now resides with his wife, Robin.

Dr. McCarty has been active in five local sections of the ACS, has chaired two of those sections and served in many other local section positions. He has been a Councilor for over 15 years, has served on numerous ACS national committees and has chaired the Local Section Activities Committee and ACS Corporation Associates. He is now in his second 3-year term as Director-at-Large of the ACS.

For more information about attending the Award Dinner please see the Central Regional Meeting website at <http://membership.acs.org/P/Pitt/crm.html> or contact Kay Bilal at 304/723-2358 or [bilal988@cs.com](mailto:bilal988@cs.com)

## 2003 Directory of Pittsburgh Section Officers and Committee Chairs Available Online Through Pittsburgh Section Website

A complete directory of names, phone numbers, and addresses for Pittsburgh Section officers and committee chairs can be found on the section's website.

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

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# 35th ANNUAL ACS CENTRAL REGIONAL MEETING PROGRAM

## The Technical Program

The technical program offers a full schedule of oral and poster sessions covering a variety of topics, including a special symposium organized and presented by the Pittsburgh Bioinorganic Chemistry Conference. Where session speakers have been confirmed, information is presented. In other cases, information will be listed when available at the CRM web site: <http://membership.acs.org/P/Pitt/crm.html>.

## Pittsburgh Bioinorganic Chemistry Conference

The Pittsburgh Bioinorganic Chemistry Conference will contribute a one-day symposium at CRM to celebrate the bioinorganic chemistry of Pittsburgh region's universities in conjunction with the 100th Anniversary of the ACS Pittsburgh Section. This will take place Monday, October 20, beginning at 8:30 am. Topics will vary to touch upon the many aspects of bioinorganic chemistry representative of the fine contributions made in the Pittsburgh area.

At 7:00 pm, Professor Christopher Orvig, University of British Columbia (Vancouver), will lead a special presentation on "Insulin-enhancing Vanadium Compounds."

## Sunday Afternoon, October 19, 2003

### ACS Student Affiliate Regional Meeting & Poster Session Panel Discussion on Aviation Chemistry: 100 Years Since Kitty Hawk

- ◆ Dr. Bruce Beaver, (Duquesne University) Gasoline to Jet Fuels and Beyond
- ◆ Dr. Rob Sanders, ALCOA R&D Co. Aerospace Metallurgy
- ◆ Speaker to be announced "Airplane Coatings"
- ◆ Speaker to be announced "Solid State Chemistry and Communications"

### CHEMAGINATION Contest for High School Students: Wright Brothers Anniversary Related Poster & Project Competition

## Sunday Evening, October 19, 2003

### Reception & Plenary Lecture: John B. Fenn (Virginia Commonwealth University)

"Electrospray Wings for Molecular Elephants"



## Monday Morning, October 20, 2003

### Nanoscience 1

Today's nanoscience is aimed at learning how to make novel nanoscale materials and devices, uncovering how behavior at the nanoscale differs from the macroscopic, discovering the rules that govern the behavior of matter at the nanoscale, designing new tools and techniques that facilitate characterization and manipulation of nanoscale objects; devising schemes that enable the development of long range order with nanoscale objects harnessing the power of (macro)molecular self-organization to mimic the ability of biological systems to control the transformations of matter and energy learning how to connect our nanoscale objects to the macroscopic world anticipating how nanoscience will change our way of life. The Nanoscience Symposium brings together researchers who are involved in such interdisciplinary pursuits, with the hope of paving the way to future nanotechnologies, which will change our way of life.

- ◆ Seth Goldstein (Carnegie Mellon University) Implications of Nanoscale Components on Computing
- ◆ Paul Weiss (Pennsylvania State University) Creating Nanostructures through Self- and Directed Assembly
- ◆ Hongkoo Kim (University of Pittsburgh) Nanosystems on a Chip Based on self-Organized Nanostructured Wafers
- ◆ Rob Dickson (Georgia Institute of Technology) Nanoscale Optoelectronics
- ◆ Eric Borguet (University of Pittsburgh) Nanoscale Dynamics at Electrochemical Interfaces

### New Reaction Technologies for Organic Chemistry

The symposium focuses on the latest and most advanced reaction methodologies for organic synthesis. Catalyzed asymmetric transformations, among the most important families of methodologies in modern organic synthesis, constitute a central theme for the symposium. The symposium also emphasizes new and emerging methodologies for carbon-carbon bond construction that have provided new paradigms in organic synthesis strategy.

- ◆ T. V. Rajanbabu, (Ohio State University) Stereoselective Synthesis with Olefins and Acetylenes: New Ligands and Other Control Elements for Homogeneous Catalyzed Reactions
- ◆ Paul E. Floreancig, (University of Pittsburgh) Electrophile Formation from Unexpected Sources
- ◆ Fraser Fleming, (Duquesne University) Oxonitriles: Multicomponent Grignard Addition-Alkylation
- ◆ David M. Barnes, (Abbott Laboratories) Development of a Catalytic, Asymmetric Addition of 1,3-Dicarbonyl Compounds to Nitroalkenes in the Synthesis of Endothelin-A Antagonist ABT-546
- ◆ Michael Calter, (University of Rochester) TBA

## ACS CENTRAL REGIONAL MEETING PROGRAM

### *Innovations in Chemical Education*

Professor Joseph Grabowski has organized a full day symposium on Innovations in Chemical Education. Five speakers in each the morning and afternoon session of this Monday, 20 October 2003 event, will present some of the most recent and imaginative efforts to enhance student learning primarily at the college level. Several speakers will present novel IT (Information Technology) tools to enhance learning across a range of courses. Other speakers will focus on innovative approaches unique to a specific course such as Research-Oriented Writing (a course for upper division Chemistry majors) or The Chemistry of Art (a course for non-majors). One speaker, the chair of the REU Leadership Group for the NSF Chemistry Division, will discuss the ultimate form of active learning, namely undergraduate research. In this eclectic mix of speakers, topics can be found to interest every chemical educator, ranging from those dealing with first semester students to those focused on students about to graduate, and across all the disciplines of Chemistry. Whether you have time to hear the entire symposium, just one of the two sessions, or even an isolated talk, we look forward to seeing you there.

#### *Innovations in Chemical Education 1*

- ♦ Richard Hark (Juniata College) The Chemistry of Art: Teaching Science in a Liberal Arts Context
- ♦ David Yaron (Carnegie Mellon University) Virtual Labs and Scenario-based Learning for Introductory Chemistry
- ♦ Rick Moog (Franklin & Marshall College) Process Oriented Guided Learning: A Student-Centered Approach to Chemistry Education
- ♦ John Penn (West Virginia University) A New Element on the Periodic Table - IT - Using the Element of Information Technology (i.e., Computer-assisted Learning) in the Chemistry Classroom
- ♦ Elisabeth T. Bell-Loncella (University of Pittsburgh at Johnstown) Synthesis and Characterization: Guided Inquiry and Molecular Modeling in an Upper Level Comprehensive Lab

#### *Innovations in Chemical Education 2*

- ♦ Marin Robinson (Northern Arizona University) Teaching Research-Oriented Writing Skills to Upper Division Chemistry Majors
- ♦ Nancy Levinger (Colorado State University) Undergraduate Research: Developing connected, motivated, and inspired undergraduate students
- ♦ Kenneth D. Jordan (University of Pittsburgh) The Third Dimension in Visualization
- ♦ Jonathan N. Southard (Indiana University of Pennsylvania) Protein Structure Modeling and Visualization: a discovery process for undergraduates
- ♦ Mark Bier (Carnegie Mellon University) Protein Identification Using the Virtual Mass Spectrometry Laboratory

### *Recent Advances in Polymer Chemistry*

#### *Frontiers in Mass Spectrometry Instrumentation and Applications*

- ♦ Robert Cotter (Johns Hopkins University)
- ♦ David Muddiman (Mayo Clinic)
- ♦ Michael Kinter (Cleveland Clinic Foundation)
- ♦ Mark E. Bier (Carnegie Mellon University), From 3D to 2D: The Evolution of the Quadrupole Ion Trap Mass Spectrometer

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### *Tissue Engineering*

There are millions of surgical procedures performed every year in the United States that require tissue substitutes to repair damaged or diseased organs. Tissue engineering is an emerging technology that has the potential to regenerate organs and tissues. Our keynote speaker is Steve Badylak, MD, PhD, DVM, who will discuss using native materials as tissue engineering scaffolds. Dr. Badylak will describe his research using small intestinal submucosa as a replacement for tissues such as skin, abdominal wall, and blood vessels. Our three additional speakers will discuss soft tissue regeneration using novel synthetic polyurethanes, research with native polymers and their potential in musculoskeletal applications, and research in the area of blood-contacting materials for cardiac assist devices. Their topics range from synthetic materials to native materials for applications in cardiovascular tissue engineering and both hard and soft tissue regeneration.

- ♦ Stephan Badylak, (University of Pittsburgh) Keynote Address: The ECM as a Bioscaffold: The Result of Millions of Years of R&D
- ♦ William Wagner, (University of Pittsburgh School of Medicine) Soft Tissue Engineering with Biodegradable Elastomers
- ♦ Janine Orban (DePuy - a Johnson & Johnson Company) Covalent Cross-linking of Extracellular Matrix Materials for Musculoskeletal Applications.
- ♦ James Runt, (Pennsylvania State University) Blood-contacting materials in cardiac assist devices: polyurethane copolymers and nanocomposites

### *Bioinorganic Chemistry*

The Pittsburgh Bioinorganic Chemistry Conference will have two sessions, one starting 8:30AM on Monday, October 20. The event celebrates the bioinorganic chemistry of Pittsburgh region universities in conjunction with the 100th Anniversary of the Pittsburgh ACS Section. Therefore the topics are widely varied to cover the many aspects of bioinorganic chemistry as a survey of the fine contributions made in the Pittsburgh vicinity. Thirty minute talks will be given, starting with a discussion on iron clusters, and then oxygen atom transfer by Mo complexes, and metalloporphyrin reactions. After a break at 10:00AM, the session resumes at 10:15AM for metal ion assemblies on DNA analogues, lanthanide luminescence probes for in vivo imagery, and cisplatin-mediated gene expression.

The afternoon session resumes at 1:30PM with the development of ruthenium nitrosyl complexes as anti-HIV agents, and ruthenium nitrosyls as anticancer agents. This is followed by presentations about robust macrocycle green chemistry catalysts that utilize H<sub>2</sub>O<sub>2</sub>, and then by development of chemosensors for Zn(II) and Fe(III). After a short break at 3:10PM, the conference resumes with photo-activated DNA metallo-reagents binding and cleavage. The afternoon session concludes with a special presentation by the distinguished Professor Eckard Munck of CMU on oxygen activation as studied via Mossbauer methods.

A special evening presentation at 7:00 PM will be given by Professor Christopher Orvig of the University of British Columbia (Vancouver) on "Insulin-enhancing Vanadium Compounds."

## ACS CENTRAL REGIONAL MEETING PROGRAM

### *Bioinorganic Chemistry - Cont'd from page 3*

- ♦ James Cowan, (Ohio State University) Adventures with Cellular Iron. The Nuts and Bolts of Cellular Cluster Assembly
- ♦ Partha Basu, (Duquesne University) Molybdenum Enzyme Models
- ♦ Alan Stolzenberg, (West Virginia University) Structural Effects of Metalloporphyrins on their Reactivities
- ♦ Catalina Achim, (Carnegie-Mellon University) Bio-inspired Approach for Molecular-Level Organization of Transition Metal Ions
- ♦ Stephane Petoud, (University of Pittsburgh) Lanthanide Complexes as Biomarkers and Nanotechnology Materials
- ♦ Rathinda Bose, (Northern Illinois University) Cisplatin-Mediated Gene Expression in Ovarian Cells
- ♦ Rex Shepherd (University of Pittsburgh), [Ru(NO)Cl<sub>3</sub>(ferrozine)]<sub>2</sub>- as a Potential gp-120 Virus-cell Fusion inhibitor (anti-HIV-1 Complex)
- ♦ Barbara Serli (University of Trieste), Development of Ruthenium Nitrosyl Anticancer Agents and Precursors
- ♦ Colin Horwitz (Carnegie-Mellon University), Green Chemistry: Metallo-Catalysts for the Utilization of H<sub>2</sub>O<sub>2</sub> as a Biosphere-Benign Oxidant
- ♦ Christain Bruckner (University of Connecticut), Macrocyclic Complexes
- ♦ Claudia Turro (Ohio State Univ.), Photoinduced Reactivity of Bimetallic and Mononuclear Transition Metal Complexes in Solution and with Biomolecules
- ♦ Eckard Munck (Carnegie Mellon University), Iron-Sulfur Proteins Studied by EPR Spectroscopy

### *Evening address*

- ♦ Christopher Orvig (University of British Columbia), Insulin-enhancing Vanadium Compounds

## Monday Afternoon, October 20, 2003

### *Catalysis by Main Group Elements*

Is there unexploited catalytic potential in main group elements? Although their role in catalysis has largely been limited to roles as simple Lewis acids or as delivery reagents for substrate pieces in transition-metal catalyzed processes, there are tantalizing examples of main group compounds performing beyond their normal boundaries, acting for all intents and purposes like transition metals. This symposium will sample the work of several researchers that are exploring the boundaries of main group catalysis in polymerization and small-molecule synthesis.

### *Conducting Polymers*

- ♦ Thomas Bjornholm, (University of Copenhagen)
- ♦ Richard Gregory, (Clemson University)
- ♦ Greg Sotzing, (University of Connecticut)
- ♦ Tomek Kowalewski, (Carnegie Mellon University)
- ♦ Richard McCullough, (Carnegie Mellon University)

### *Gene Therapy*

- ♦ Robert Lee (Ohio State University), Receptor-based, tumor-targeted vectors for drug and gene delivery.
- ♦ Kyung-Dall Lee (University of Michigan), Listeriolysin O-containing vectors for effective cytosolic delivery of oligonucleotides and genes.

- ♦ Song Li (University of Pittsburgh), Novel lipidic vectors for targeted delivery of genes and oligonucleotides to pulmonary endothelium.
- ♦ Hamid Ghandehari (University of Maryland, Baltimore), Recombinant protein-based carriers for drug and gene delivery.
- ♦ Paul Robbins (University of Pittsburgh), Novel protein transduction domains for drug and gene delivery.
- ♦ Leaf Huang (University of Pittsburgh), LPD nanoparticles as a novel delivery vector for peptide vaccine.

### *Inorganic Catalysis*

Poster Session and Contributed Talks on topics covered in the Symposia sessions on Monday

## Tuesday Morning, October 21, 2003

### *Computational Chemistry*

This symposium addresses state-of-the-art developments in combinatorial chemistry and parallel synthesis. Symposium presentations will focus on the emerging techniques currently enhancing efficiency and driving fundamentally new strategies in combinatorial chemistry. Topics will highlight solution-phase and phase-switching strategies for library synthesis.

### *Computational Chemistry 1*

- ♦ Sharon Hammes-Schiffer (Penn State)
- ♦ Jeff Evasek (Duquesne University)
- ♦ Maria Kurnikova (Carnegie Mellon University)
- ♦ George Shields (Hamilton College)
- ♦ 2 contributed talks @ 20 minutes each

### *Computational Chemistry 2*

- ♦ Mike Klein (Pennsylvania State University)
- ♦ Ken Jordan (University of Pittsburgh)
- ♦ Sherwin Singer (Ohio State University)
- ♦ 5 contributed talks @ 20 minutes each

### *New Synthetic Methods and Their Application to Natural Product Assembly*

- ♦ Ken S. Feldman, (Pennsylvania State University) Natural Product Synthesis through Alkynylidonium Salts
- ♦ Huw M. Davies, (SUNY at Buffalo) Donor/Acceptor Substituted Carbenoids as Versatile Intermediates in Organic Synthesis
- ♦ George O'Doherty, (West Virginia University) TBA
- ♦ P. Andrew Evans, (Indiana University) Bismuth-Catalyzed Etherification Reactions for the Stereoselective Construction of Polycyclic Ethers

### *Innovations in High School Chemistry Education: The winners of the Central Regional High School Teacher of the Year Awards.*

Five previous winners of the ACS Central Regional High School Chemistry Teaching Award will be discussing some of their teaching ideas. The presenters will be Loretta S. Buddendeck (1996) of Centerville, OH, will speak on Kinetics; Kathy Kitzmann (1997) of Mercy High School, Farmington Hills, MI, will speak on Gas Laws; Fen Lewis (1998) of Strongsville High School, Strongsville, OH, will speak on Explorations in Polymers - A Class Project; Annis Hapkiewicz (2001) of Okemos High School, Okemos, MI, on Chemistry Misconceptions; and Christine Allen (2002) of Worthington High School, Worthington, OH.

## ACS CENTRAL REGIONAL MEETING PROGRAM

### *Innovations in High School Chemistry Education Cont'd*

- ♦ 1996 - Loretta S. Buddendeck of Centerville High School, Centerville, OH will speak on Kinetics.
- ♦ 1997 - Kathy Kitzmann of Mercy High School, Farmington Hills, MI will speak on Gas Laws.
- ♦ 1998 - Fen Lewis of Strongsville High School, Strongsville, OH, Explorations in Polymers - A Class Project
- ♦ 2001 - Annis Hapkiewicz of Okemos High School, Okemos, MI will speak on Chemistry Misconceptions.
- ♦ 2002 - Christine Allen of Worthington High School, Worthington, OH. No topic yet.

### *Recent Advances in Coating Chemistry 1*

The Keynote speaker for the Coatings Symposium will be Dr. Rose Ryntz, Manager and Staff Technical Fellow of Visteon Corporation. Dr. Ryntz, recipient of the ACS 2003 Tess Award\*, is recognized as one of the world's leading experts in the area of automotive plastic coatings. She has received many significant honors and awards and published many papers, books and patents. The Symposium will include a balance of papers from outstanding academic and industrial scientists.

\*The Roy W. Tess Award is presented annually by the Polymeric Materials: Science and Engineering Division in recognition of outstanding individual achievements and note-worthy contributions to coatings science, technology and engineering.

- ♦ Dr. Rose Ryntz (Visteon Corp) Keynote Speaker, Achieving Robust Decorated Plastic components in the Automotive Industry
- ♦ Professor Mark Urban (University of Southern Mississippi), Recent Advances in Film Formation of K2 Waterborne Polyurethanes: Imaging and modeling
- ♦ Dr. Mei Li (Carnegie Mellon University), Synthesis of Urethans/Acrylic Hybrid nanoparticles via a Miniemulsion Polymerization Process
- ♦ Mike Dvorchak (Bayer Polymers), The Use and Chemistry of UV Cure Using Diffuse UV A Lamps for Automotive Refinish Primers and Clearcoats

### *Surface Science*

The field of surface science has made enormous progress in being able to observe and predict the chemical behavior of surfaces. This is related to the use of an arsenal of atomic level measurement techniques to probe the details of molecular behavior on well defined surfaces. In addition, modern theoretical methods have been developed which predict with uncanny accuracy the behavior of surfaces. Surface chemistry connects to many important technologies including heterogeneous catalysis, semiconductor processing, materials science, sensor technology, molecular electronics, and the new area of nanoscience that is dominated by surface phenomena.

This symposium brings to Pittsburgh eight speakers who are eminent in the field - both experimentalists and theorists. Come and hear about carbon nanotube surface chemistry, metal clusters, chirality effects on surfaces, the formation of self-organized organic layers on surfaces, and how electrons in solids behave when excited.

### *Surface Science 1*

- ♦ Kenneth Jordan (University of Pittsburgh), Surface Chemistry on Silicon and Carbon Nanotube Surfaces
- ♦ Charles Campbell (University of Washington), Metal Clusters-Atom-Atom Bond Energies
- ♦ Jinguang Chen (University of Delaware), Catalytic Activity of Metal Carbide Surfaces
- ♦ Andrew Gellman (Carnegie Mellon University), Chirality at Surfaces

### *Surface Science 2*

- ♦ Robert Hamers (University of Wisconsin), Self Organized Layers on Semiconductor Surfaces
- ♦ John T. Yates, Jr. (University of Pittsburgh), Self Organization on Metal Surfaces
- ♦ Horia Metiu (University of California-Santa Barbara), Atom and Cluster Dynamics on Surfaces
- ♦ John Tully (Yale University), Dynamics of Electronic Excitation at Surfaces

### *Proteomics*

- ♦ Mark Gerstein, (Yale University), Keynote Address
- ♦ Naftali Kaminski, (University of Pittsburgh Medical Center), "Taking a retrospective look at microarrays - from pulmonary fibrosis to multiple sclerosis"
- ♦ Billy W. Day, (University of Pittsburgh), Title to come
- ♦ Catherine E. Costello, (Boston University School of Medicine), Title to come
- ♦ Jonathan Minden, (Carnegie Mellon University), "Proteome Stargazing"

## Tuesday Afternoon, October 21, 2003

### *Combinatorial Chemistry: New Directions, Strategies and Methodologies*

This symposium addresses state-of-the-art developments in combinatorial chemistry and parallel synthesis. Symposium presentations will focus on the emerging techniques currently enhancing efficiency and driving fundamentally new strategies in combinatorial chemistry. Topics will highlight solution-phase and phase-switching strategies for library synthesis.

- ♦ Craig S. Wilcox, (University of Pittsburgh) Precipitons - Switchable Phase Tags for Chemical Separations
- ♦ Wei Zhang, (Fluorous Technologies Inc.) Combinatorial Chemistry: New Directions, Strategies and Methodologies
- ♦ Miles G. Siegel, (Eli Lilly & Co.) Application of Solution Phase Array Synthesis to General Library and Medicinal Chemistry Problems
- ♦ Craig Lindsley, (Merck & Co.) Methodology and Tools to Expedite the Synthesis and Purification of Analog Libraries

### *History of Chemistry in Pittsburgh*

The symposium on the History of Chemistry in the Pittsburgh area will focus on an eclectic selection of the many aspects of the history of chemistry in the area encompassed by the Pittsburgh Section. Topics will include scientific developments in NMR spectroscopy, optical spectroscopy, chemical computations, polymer chemistry, and coal gasification, aspects of the chemical industry, and the role of PITTCON in the chemical sciences community.

## ACS CENTRAL REGIONAL MEETING PROGRAM

### *History of Chemistry in Pittsburgh Cont'd*

- ◆ David A. Hounshell (Carnegie Mellon University), Historical Perspectives on Chemistry in Pittsburgh
- ◆ Gary D. Patterson (Carnegie Mellon University), Polymer Chemistry at the Mellon Institute
- ◆ Gordon S. Rule (Carnegie Mellon University), Developments in NMR Spectroscopy in Pittsburgh
- ◆ Dale L. Keairns (US DOE/NETL), Research on Coal Gasification and its Products
- ◆ Foil A. Miller (University of Pittsburgh, Emeritus) Perspectives on Optical Spectroscopy in Pittsburgh
- ◆ Gerald L. Carlson (former PITTCON Chair), Contributions of PITTCON to the Chemical Sciences Community

### *Energy-Fuel*

Coal is the most abundant fossil energy resource both in the United States and throughout the world. However, environmental emissions from coal have increasingly become a target of public concern and regulations. Due to a series of continuing advances in coal mining and coal utilization technology, coal remains an economically and environmentally viable fuel of choice for electric power generation. Through the U.S. Department of Energy's (U.S. DOE's) Coal & Power Programs, a number of technologies are being developed and demonstrated to meet the environmental challenges of coal usage for electric power generation applications. These programs span a broad spectrum of research (e.g., bench-scale), development (e.g., pilot & proof-of-concept scale), and demonstration (e.g., commercial scale) activities. Applicable technologies include coal combustion, gasification, and conversion, as well as technologies for the control of SO<sub>2</sub>, NO<sub>x</sub>, Hg, and fine particulate emissions, and byproduct utilization processes. Large, commercial-scale projects are conducted under U.S. DOE's Clean Coal demonstration programs, where the government can cost-share up to 50% of the demonstration project costs. These demonstration programs presently include 36 projects demonstrated under the \$4.75 billion Clean Coal Technology (CCT) program of the 1980s and 1990s, 6 projects under the \$100 million Power Plant Improvement Initiative (PPII), and the initial 8 project selections recently announced under the first round of the President's \$5+ billion Clean Coal Power Initiative (CCPI). This symposium will present results and status of representative commercial-scale projects conducted under the U.S. DOE Clean Coal demonstration programs, as well as major avenues being explored under key coal-related R&D programs. Future directions will be summarized to the extent possible. For example, just as the previous generation of clean coal technologies proved successful in mitigating concerns associated with acid rain precursor emissions (i.e., SO<sub>2</sub> and NO<sub>x</sub>), a new generation of highly efficient power plant technologies, supplemented by carbon sequestration, may allow us to address climate change concerns while continuing to utilize the world's abundant coal reserves. Toward that end, U.S. DOE is now embarking on a new \$1 billion, 10-year Presidential initiative known as FutureGen, which will feature an advanced, nearly emissions-free power plant capable of co-producing electricity and hydrogen, in combination with CO<sub>2</sub> sequestration.

### *Energy-Fuel 1*

- ◆ Theodore McMahon (US DOE/NETL), Mercury and Multi-Pollutant Emission Control Technologies
- ◆ James R. Longanbach (US DOE/NETL), Coal-Powered Fuel Cells

### *Energy-Fuel 2*

- ◆ Diane Revay Madden (US DOE/NETL), Fuels & Power Production from Coal
- ◆ Milton Wu (Universal Aggregates, LLC), Manufactured Aggregate Process for Coal Combustion Byproduct Utilization

### *Bioinformatics*

The discipline of Bioinformatics involves the development and application of computational tools that are designed to derive correlations between measurements obtained at scaled levels of biological development, from the genome to the entire organism and even to society. The Continuum of Bioinformatics across which bioinformatics exerts itself includes: genomics, proteomics, metabolomics, cellomics, tissue informatics, organomics and the organism as a whole. The fullest expression of bioinformatics becomes Systems Biology, in which all elements of the biological system are seamlessly considered as a whole and interdependencies can be identified readily through digital correlation. The presentations in this panel will encompass most of the major sectors in the Continuum of Bioinformatics, including their integration.

Poster Session and Contributed Talks on topics covered in the Symposia sessions on Tuesday.

## Wednesday Morning, October 22, 2003

### *Regional Superstars*

### *Organic-Inorganic*

### *Chemical Education*

### *Energy-Fuel 2*

### *Analytical-Physical*

### *Chemical Technicians: Salute to Excellence*

**Events and times may change prior to the meeting date. Please visit the ACS Central Regional Meeting website at: <http://membership.acs.org/P/Pitt/crm.html> for the latest details and late breaking news.**

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## 35th ACS Central Regional Meeting Events and Activities

### TICKETED EVENTS

(All ticketed events contingent upon sufficient registration)

Gateway Clipper Cruise and Dinner - \$ 45.00  
Monday, October 20, 2003, 6:00 PM - 10:00 PM  
Limited to first 200 participants

Women Chemists Luncheon - \$ 30.00  
Speaker, Judge Cynthia Baldwin  
Tuesday, October 21, 2003, 12:00 PM - 1:30 PM

Pittsburgh Award  
100th Anniversary Celebration - \$ 50.00  
Reception, Dinner, and Former Chairman's Night  
Tuesday, October 21, 2003 6:00 PM - 9:00 PM

Priestley House Tour and Dinner - \$ 60.00  
Thursday, October 23, 2003, 7:30 AM - 8:30 PM  
Price includes Bus, Admission, and Box Lunch only. Dinner  
cost is on your own!

#### Schedule:

7:30 am: Pickup at Station Square

8:00 am: Pickup at Monroeville Mall, pole #25,  
PAT Bus Park & Ride

10:00 am: Pit-Stop and Coffee Break

12:00 noon: Arrive Northumberland, PA & Box  
Lunch

1-3:00 pm: Priestley House Visit  
(2 groups of 20)

3:30-5 pm: Dinner (cost on your own), Country  
Cupboard Restaurant, Inn & Shops

8:00 pm: Arrive Monroeville Mall

8:30 pm: Arrive Station Square

### Other Events and Workshops

Reception and Plenary Speaker - John B. Fenn  
Sunday, October 19, 2003

Director's Breakfast  
Tuesday, October 21, 2003 7:00 AM - 8:30 AM  
(Directors hosted by ACS National)

Steering Committee Luncheon  
Wednesday, October 22, 2003, 12:00 - 1:30 PM  
(Steering Committee Members of the Central Regional Meeting, by Invitation; hosted by the 35th CRM)

Younger Chemists Committee Lunch and Workshop  
Sunday, October 19, 2003 (by Invitation only)

*For information on obtaining tickets,  
please visit the ACS CRM website at  
<http://membership.acs.org/P/Pitt>*



## National Chemistry Week 2003

**MARK YOUR CALENDAR** - NCW 2003 is scheduled for October 19-25, 2003. The NCW theme for this year is "Earth's Atmosphere and Beyond," honoring innovators and pioneers in aviation and atmospheric chemistry. The theme coincides with the 100th anniversary of the Wright Brother's first powered flight.

For the fifth year in a row, the Pittsburgh Section will be holding a two-day event at the Carnegie Science Center on Friday and Saturday, October 24th and 25th, from 9:00 AM to 5:00 PM each day. There will be 25+ tables throughout the Carnegie Science Center staffed with volunteers from area businesses, professional societies, high schools, colleges and universities, performing hands-on activities, demonstrations, and special theater-style shows.

The Pittsburgh Section is looking for individuals and groups to assist in coordinating this event. If you have not volunteered or attended a Local Section activity in the recent past, here is a great opportunity to get involved. This could be your opportunity to help educate Pittsburgh and surrounding communities of the importance that chemistry plays in the quality of our daily lives. Your participation will ensure that the Pittsburgh Section brings about a positive change in the public's impression of science and will help to promote a positive message about chemistry, particularly to elementary and secondary school children.

For more information about the NCW celebration in Pittsburgh, visit the Pittsburgh Section's web site at <http://membership.acs.org/P/Pitt> or for general NCW information <http://chemistry.org/ncw>

To volunteer yourself or your organization to participate in this year's NCW celebration, contact the Pittsburgh Section's NCW Coordinator:

V. Michael Mautino  
Bayer Polymers LLC  
100 Bayer Rd. Bldg. 2  
Pittsburgh, PA 15205  
Phone: 412-777-4792  
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# 2004 CANDIDATES FOR OFFICE

Pittsburgh Section  
American Chemical Society

The 2003 Nominating Committee of the Pittsburgh Section of the American Chemical Society (\*) submits the following slate of candidates for Section office for 2004. All persons nominated are members of the society and have agreed to serve if elected.

**Only members of the Pittsburgh section of the American Chemical Society are eligible to vote. All ballots must be received by the Secretary of the Pittsburgh Section by November 1, 2003.**

(\*) 2003 Nominating Committee: Mark E. Bier (*Chair*), Myron Shaffer (*Section Chair*), Kay Bilal (*Section Chair-elect*), Alan Bushmire (*WPTAG Chair*), Kay Bilal (*Chem Ed. Chair*) and Dennis N. Smith (*Energy Tech Chair*).

## Chair-Elect

Neil Donahue  
Thomas Sarkus

### *Neil M. Donahue*

I am an Assistant Professor of Chemistry and Chemical Engineering at Carnegie Mellon (from August 2000). I have been an ACS member since 1997 and am also active in other societies, such as the American Geophysical Union (since 1985) and the American Institute of Chemical Engineers (since 2001). I am currently serving as the Pittsburgh Section Secretary, having been elected Secretary Elect in Fall 2001. I am deeply interested in strengthening the connections among industry, academia, the school systems, and local governments within the Section. In particular, I believe that several research strengths in local universities and industry offer the potential for the Pittsburgh area to develop into an internationally recognized center of excellence in green chemistry and what might be called 'sustainability science'.

Beyond this broad goal, I believe that the Section Chair has three major responsibilities. First, the existing strengths of the section must be maintained. Chief among these are a truly outstanding educational outreach program run by the educational group, and the highly energetic (and award winning) efforts associated with National Chemistry Week. Second, section finances must remain healthy, and the budget balanced. Third, the viability of the section demands increased participation in section leadership. The repeated dearth of candidates for section offices is not healthy sign. We must find ways to increase active participation by our 1800 members. I believe the efforts described above, with associated publicity, is a key part of such a strategy.

### *Thomas A. Sarkus*

Tom Sarkus is Director of the Coal Power Projects Division at the U.S. Department of Energy's National Energy Technology Laboratory, where he supervises project management activities under the \$4.75 billion Clean Coal Technology demonstration program, the \$100 million Power Plant Improvement Initiative, and the \$5+ billion Clean Coal Power Initiative. The Clean Coal projects managed by Mr. Sarkus' Division have garnered national and international recognition, including Power magazine's annual Powerplant Award (six times), the National Society of Professional Engineers' Outstanding Achievement Award, and the R&D 100 Award. Mr. Sarkus earned a B.S. in chemistry, a B.S. in geology, and an M.S. in earth science from California University of Pennsylvania; and a J.D. in law from Duquesne University. His professional interests revolve around the common themes of energy and the environment (e.g., acid rain, byproduct utilization, global climate change), and he has worked on advanced combustion, gasification, and emissions control (SO<sub>2</sub>, NO<sub>x</sub> and particulate) projects pertaining primarily to the electric power industry. Tom has hosted specialty conferences on Unburned Carbon in Utility Fly Ash (annually since 1995, with 142 attendees last year) and Selective Catalytic & Non-Catalytic Reduction for NO<sub>x</sub> Control (annually since 1997, with 351 attendees last year), thereby convening scientific and engineering professionals from throughout the United States and 22 foreign countries in Pittsburgh. Mr. Sarkus served formerly as ACS Pittsburgh Section Secretary and as Chairperson of the Coal Technology Group. He currently serves on the Section's Central Regional Meeting, Library, and Pittsburgh Award committees.

## Director

Bodie Douglas  
Mordecia Treblow  
Bob Witkowski

### *Bodie Douglas*

Bodie E. Douglas, Professor Emeritus of Chemistry at the University of Pittsburgh, received B.S. and M.S. degrees from Tulane University. Between degrees he spent three years in the U. S. Navy, serving on a battleship in the Pacific. He obtained the Ph.D. from the University of Illinois for work under the direction of Professor John C. Bailar, Jr.

From 1949 until 1952 he was on the faculty at the Pennsylvania State University (then College) and has been at the University of Pittsburgh since 1952. Although he has retired he works at the office five days per week. He was a Fulbright Lecturer at the University of Leeds in England for 1954-55 and Visiting Professor at Osaka University in 1970 under the auspices of the Japan Society for the Promotion of Science.

He was Chairman of the Pittsburgh Section in 1976-77 and has served as Director and Counselor. For about 10 years he was the Pittsburgh Coordinator for the National Chemistry Olympiad program. He served as Editor-in-Chief of Volume 18 of *Inorganic Syntheses*, Wiley-Interscience, 1978 and Co-editor (with Y. Saito of Japan) of *Stereochemistry of Optically Active Compounds of Transition Metals*, ACS Symposium Series, 1980. The third edition of *Concepts and Models of Inorganic Chemistry and Problems in Inorganic Chemistry* by Douglas, McDaniel and Alexander, Wiley, were published in 1994. *Symmetry in Bonding and Spectra* by Douglas and Hollingsworth was published by Academic Press in 1985.

**BALLOT**  
For Offices of the  
**2004**  
Pittsburgh Section  
American Chemical Society

**Chair-Elect**

CHAIR-ELECT is a three-year term, serving one year as Chair-Elect (during 2004), one year as Chair (during 2005) and one year as Past Chair (during 2006).

*(Vote for One)*

Neil Donahue .....   
Thomas Sarkus .....

**Secretary-Elect**

SECRETARY-ELECT is a two-year term, serving one year as Secretary-Elect (during 2004) and one year as Secretary (during 2005).

*(Vote for One)*

\_\_\_\_\_   
*(Write -in)*

**Treasurer-Elect**

TREASURER-ELECT is a two-year term, serving one year as Treasurer-Elect (during 2004) and one year as Treasurer (during 2005).

*(Vote for One)*

\_\_\_\_\_   
*(Write -in)*

**Directors**

Directors are three-year terms. Directors serve on the executive committee. One director position will fill a vacancy from 2003 and will thus be for a two year term.

*(Vote for Two)*

Bodie Douglas .....   
Mordecai Treblow .....   
Robert Witkowski.....

**Councilors**

Councilor is a three-year term. Councilors attend national ACS council meetings.

*(Vote for two)*

Brian Strohmeier .....   
Patricia Wilson .....

**INSTRUCTIONS**

Ballot must be placed and sealed in the enclosed blank envelope. Place the blank envelope in the enclosed printed envelope which is addressed to Pittsburgh Section Secretary Neil M. Donahue. Print your return address in upper left hand corner and sign your name on the line provided. Ballots received in any other manner will be disqualified.

**Only members of the Pittsburgh section of the American Chemical Society are eligible to vote. All ballots must be received by the Secretary of the Pittsburgh Section by November 1, 2003.**



## **Mordecai Treblow**

Mordecai Treblow earned his BA (University Pennsylvania), MS (Pennsylvania State University), PhD (University of Pittsburgh) all in chemistry. Having spent half his career in academia and half in industry, the retired from Mead Corp. Among other industrial positions he was a Senior Chemist at Calgon Corp. His academic positions included associate professor at Bloomsburg State University and Mercy College of Detroit (Chair, Physical Science and Math Dept.). He authored or co-authored 12 papers, mainly chemical education, and presented 10 papers at national and regional ACS meetings.

Pittsburgh Section ACS: Active since 1979. Chair: Professional Relations and Employment Comm. (1991-99, 2001-03), ACS Affairs Comm. (1997-02), Membership Comm. (1982-83). Mordecai co-chaired the first two Tripartite Symposia (1982-83). Member: Long Range Planning Comm. and the Finance Comm. Treblow organized and chaired (1996-97) the Retired Chemists Group resulting in merger with the Pittsburgh Chemists Club. He was a Pittsburgh Section Councilor (1984-92; 1997-2002); Alternate Councilor (1996).

National ACS: Member since 1956. ACS Board of Directors, District II (1992 - 95), serving on Board Committees: Professional and Member Relations; Public Affairs and Public Relations; Society Comm. On Budget and Finance. ACS Council: Member Local Section Activities Comm. (2001-02), Professional Relations (1984-89), Economic Status (1990), Membership Affairs (1998-2000), and Divisional Activities (1991-92).

ACS Divisions: Served in the chair cycle for Division of Professional Relations (1990-92). Currently member of the History, PROF, and Nuclear Chem. and Technology Divisions. Member SACP and SSP.

Treblow received Chairman's Award for "Outstanding Service to the Pittsburgh Section" in 1998.

## **Robert E. Witkowski**

Robert E. Witkowski received his B.S., M.S., and Ph.D. from the University of Pittsburgh; he is a Pennsylvania registered professional geologist. Bob serves as a Consultant, Chemistry of Materials, to MCS Associates, Inc. He is a lecturer in the Westinghouse Science Honors Institute.

Bob was participant in the U.S. Antarctic Research Program (USARP); University of Pittsburgh Antarctic Search for Meteorites (ANSMET) project. His work at the South Pole involved the search for the cosmic dust increment to atmospheric aerosol particles; he continues to maintain an active interest in the science of carbon-rich meteorites and interplanetary dust particles (IDPs). At MCS Associates he provides consulting support in materials compatibility and analytical chemistry.

Bob is a member of the American Chemical Society (ACS), and the Society for Analytical Chemists of Pittsburgh (SACP). He is a member and also served as Chairman of the Spectroscopy Society of Pittsburgh (SSP), Chairman of the Pittsburgh Section ACS and President of the Pittsburgh Chemist Club. He is a member of the Chemical Heritage Foundation Bolton Society, and organization of chemical bibliophiles, and the University of Pittsburgh Chapter of Sigma Xi.

### **Councilor**

Brian Strohmeier  
Patricia Wilson

## **Brian R. Strohmeier**

Brian R. Strohmeier is the Assistant Chairman of the Department of Chemistry at the University of Pittsburgh. Prior to joining Pitt, he was employed in various scientific and managerial leadership positions at the Glass Technology Center of PPG Industries, Inc. and the Alcoa Technical Center. He holds a Ph.D. degree in Analytical Chemistry from the University of Pittsburgh (1984) and an M.A. degree in Business Leadership from Duquesne University (1999). His scientific research interests involve applications of surface analytical techniques, such as X-ray photoelectron spectroscopy (XPS or ESCA), Auger electron spectroscopy (AES), secondary ion mass spectrometry (SIMS), and scanning electron microscopy (SEM) for the characterization of complex materials. He holds one patent and has more than forty publications and twenty conference presentations dealing with the surface characterization of various materials.

Dr. Strohmeier's leadership interests involve promoting the study and application of modern leadership principles in R&D

organizations as well as in undergraduate and graduate level chemistry curricula. He has six publications and three conference presentations dealing with leadership topics and teaches a one-day short course on "Leadership Principles for R&D Managers and Scientists" at National ACS and PITTCON meetings. He has been a member of the ACS since 1977 and is past Chairman of the Pittsburgh Section ACS (2000). He has chaired and/or served on many various committees of the Pittsburgh Section ACS, the Society for Analytical Chemists of Pittsburgh (SACP), the Spectroscopy Society of Pittsburgh (SSP), and the PITTCON organizing committee.

## **Patricia Wilson**

I am presently Treasurer of the Western Pennsylvania Technician Affiliate Group (WPTAG) and Workshop Chair for the Division of Chemical Technicians, Inc. (TECH). I have been an active member of WPTAG since it was chartered in 1996. I have written articles for the WPTAG newsletter TECH TALK and Pittsburgh section The Crucible. I am a member and former Chair of the WPTAG Recognition Committee. I have given presentations at TECH Symposia at ACS meetings. On several occasions I have assisted WPTAG and the Pittsburgh Section of the ACS in National Chemistry Week activities at The Carnegie Science Center.

After receiving an Associates Degree in Chemistry from Bidwell Training Center, I did a 3-month externship at Bayer Corporation. For the last 7 years, I have been employed as a Senior Technician at Bayer Corporation, in the Polyurethane Division. I work in the Applications and Development area where I assist in formulating insulation systems for architectural panels and doors. Since my employment I received several promotions and Recognition Awards.

I am a member of the Bayer Emergency Response Team, where I serve as Secretary, performing such duties as; keeping monthly minutes, distributing minutes to team Officers, members and supervisors, coordinate team activities, presentations and thank you luncheons. I work along side Carlow College and Pennsylvania Women Work to do a yearly work shop on Careers Conference for High Wage/ High Skill jobs for women in the Pittsburgh area



# SPECTROSCOPY SOCIETY OF PITTSBURGH



September Meeting - Wednesday, September 17, 2003

Duquesne University  
Mellon Hall of Science  
Maurice Falk Auditorium

6:00 PM - Dinner (City View Cafe - 6th Floor)  
8:00 PM - Business Meeting  
8:15 PM - Speaker's Presentation

## “Atomic Spectrochemical Measurements Utilizing Fourier Transform, Linear Photodiode Array and Mass Spectrometers”

Gary Horlick

“2003 Pittsburgh Spectroscopy Awardee”

Professor of Chemistry

University of Alberta

Developments in instrumentation and technique can dramatically alter our capability for carrying out spectrochemical measurements. Linear photodiode arrays (PDAs) were one such development. These simple devices ushered in the era of solid state image sensor based atomic spectrometers. Spectrometers based on linear PDAs allowed for the measurement of spectral or spatial windows of emission from the inductively coupled plasma (ICP). In particular, the facile acquisition of emission spatial windows helped to clarify many aspects of ICP performance.

Even with the most recent developments in image sensor based spectrometers, matching the simultaneous continuous spectral coverage of the classic spectrograph remains elusive. Using a UV-visible Fourier transform spectrometer, a spectral library has been measured that contains full UV and visible region ICP emission spectra for 71 elements. The spectra have a resolution of 2 to 5 picometers, a wavelength accuracy of about 1 picometer, and are stored on two CDs in an interactive format.

About two decades ago “atomic” spectrometry underwent a paradigm shift with the commercial deployment of ICP mass spectrometers. This development necessitated a shift in thinking for the atomic field as we now had to understand the ICP as a source of ions rather than just as a source of photons. The new intuitions that had to be developed with respect to parameter optimization, spectral interference and matrix effects will be outlined. Now alternate sources to the ICP such as electrosprays are providing new capability for “atomic” spectrometry in the form of direct speciation measurements.

Gary Horlick, Professor of Chemistry at the University of Alberta, will receive the 2003 Pittsburgh Spectroscopy Award from the Spectroscopy Society of Pittsburgh (SSP), in recognition of his lifelong contributions to the development and characterization of new methods and systems for elemental analysis. He has pioneered the application of linear image sensors (photo-diode arrays) to atomic spectrochemical measurements, work that predated the commercial developments in this area by two decades.

His continuing research interests are in the general area of analytical spectroscopy, including the development of new spectrochemical measurement systems. Specific systems have been developed based on photo diode arrays and Fourier transform spectrometry, and new systems are now being developed based on acousto- optic tunable filters (AOTF's) that could form the basis of an all-electronic spectrometer system.

Horlick received a B.Sc. (Hons) degree from the University of Alberta in Edmonton, Alberta in 1965 and a Ph.D. degree in 1970 from the University of Illinois in Urbana, Illinois, under the direction of Professor H.V. Malmstadt. He joined the Department of Chemistry at Alberta in 1969. He has published over 147 papers dealing with his research studies and presented over 400 talks at conferences and university, government, and industrial laboratories of which 290 were invited lectures. Under his supervision, 36 students have received Ph.D. degrees, 9 students have received M.Sc. degrees and 11 students have pursued postdoctoral studies in his laboratories.

Professor Horlick has received numerous awards and other honors, including the 1977 Barringer Research Award of the Spectroscopy Society of Canada, the Meggers Award of the Society for Applied Spectroscopy (SAS) in 1985, and the Fisher Scientific Lecture Award from the Chemical Institute of Canada in 1987. During 1987/88 he was a McCalla Research Professor at the University of Alberta and received an Alberta Achievement Award from the Province of Alberta in 1988. In 1989 he received the Lester W. Strock Award of the SAS, and he was elected as a Fellow of the Royal Society of Canada in 1990. He has served on the Instrumentation Advisory Panel of Analytical Chemistry; the editorial boards of *Mikrochimica Acta*, *Canadian Journal of Spectroscopy*, *Progress in Analytical Atomic Spectroscopy*, and the *Journal of Analytical Atomic Spectroscopy*.

Dinner Reservation: Please call Janeth Pifer at 412/825-3220 X136 or email [pifer@pittcon.org](mailto:pifer@pittcon.org).

Parking Instructions: Duquesne University parking garage entrance in on Forbes Avenue. Upon entering the garage, receive ticket and drive to upper floors. Pay parking fee upon exiting with SSP parking chit. Pick up parking chit at the dinner or the meeting. Call Mitchell Johnson at Duquesne University if any difficulties arise.

POLYMER GROUP  
Pittsburgh Section  
American Chemical Society

Wednesday, September 17, 2003

Duranti's Restaurant  
128 N. Craig St.  
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(one block east of Craig Street)

*“Rheology and Dynamics of Compatibilized  
Polymer Blends”*

Dr. Sachin Velankar  
Department of Chemical and Petroleum Engineering  
University of Pittsburgh

Blending of immiscible polymers is a common means of realizing materials with properties that are difficult to obtain with individual polymers. Surface-active block copolymers are often added as compatibilizers during processing of these blends in order to promote mixing and control the morphology and properties of the final material. This talk discusses the effects of such a compatibilizer on the dynamics and the rheological properties of droplet-matrix blends.

When subjected to flow, the morphological evolution of a droplet-matrix blend occurs by deformation, breakup and coalescence of droplets. The traditional viewpoint has been that the effects of compatibilizer on these processes are attributable simply to the decrease in interfacial tension caused by the compatibilizer. Experiments on polymer blends compatibilized with diblock copolymers demonstrate that this view is overly simplistic: dynamic phenomena in compatibilized blends are fundamentally different from those in blends without compatibilizer. One key phenomenon in compatibilized blends is flow-induced gradients in compatibilizer concentration along the surface of droplets. Experiments suggest that the resulting gradients in interfacial tension can stabilize droplets against hydrodynamically-induced breakup, induce tip-stretching during relaxation, suppress coalescence of drops, and cause slow relaxation processes indicative of interfacial viscoelasticity. The gradients in interfacial tension are also found to modify the bulk rheological properties of the blend substantially, in agreement with recent theoretical results. Fluid mechanical simulations of the deformation, retraction, and coalescence of compatibilized drops confirm that gradients in compatibilizer concentration affect the dynamics of immiscible blends significantly. The implications of these results to the measurement of interfacial tension of compatibilized interfaces are discussed.

**For dinner reservations please contact:**

Michael L. White, PPG Industries Corporation  
(Tel: 412-492-5458, mlwhite@ppg.com) by Friday, September 12, 2003. Dinner is \$16.00 per person; discount rate of \$11.00 for retirees and no charge for students. *All are welcome*

*ACS Pittsburgh  
Chemists Club*

Tuesday, September 30, 2003

*“WHODUNIT?  
Raman Chemical Imaging in  
BioDefense and Forensics”*

by  
Dr. Patrick J. Treado  
President of ChemImage Corporation, Pittsburgh, PA

Duranti's Restaurant  
128 North Craig Street, Oakland PA

Cocktail Time (cash bar)..... 6:00 p.m.  
Dinner..... 6:30 p.m.  
Program..... 7:45 p.m.

For reservations, please call Ed Martin by noon, Friday, September 26  
at (724) 335-0904 or e-mail at [esm@icubed.com](mailto:esm@icubed.com)

**Abstract**

The current state of chemical imaging technology and analysis methods will be assessed. In addition, efforts to validate anthrax detection capabilities will be discussed, as well as a variety of forensic applications. Chemical imaging combines molecular spectroscopy and digital imaging, and has been demonstrated to be a powerful tool for the rapid, molecular analysis of biological threat agents in complex matrices. Chemical imaging microscopy provides molecular compositional and structural information, without the use of dyes or stains, at sub micron spatial resolution (<250 nm), in a non-contact, noninvasive, reagentless detection mode. Optical techniques for specimen interrogation include Raman scattering and fluorescence emission. Chemical imaging technologies are inherently miniaturizable and useable in hardened configurations.

**Biography**

Patrick J. Treado, Ph.D. is Founder and President of ChemImage Corporation (formerly ChemIcon Inc.), an innovative developer of chemical imaging instruments and software. Dr. Treado is an analytical spectroscopist (B.S. Georgetown University; Ph.D. University of Michigan; Postdoc National Institutes of Health) and has years of experience in the chemical imaging field, where he is a recognized leader. Dr. Treado's research interests involve the development of IR, Raman and fluorescence chemical imaging and its application to materials analysis, clinical diagnostics and process monitoring. Dr. Treado has consulted and lectured widely, and is the author of over 70 publications and patents on chemical imaging technology, methodology and applications. Dr. Treado is the recipient of several prestigious awards, including the 1998 Coblenz Award and a 2001 R&D 100 Award for ChemIcon's FALCON Raman Chemical Imaging Microscope.



# Society for Analytical Chemists of Pittsburgh



## *October Meeting*

Monday, October 6, 2003

8:00 p.m., Maurice Falk Hall, Duquesne University

Social Hour 5:30 P.M. Student Affiliates Meeting Duquesne Room (Student Union) 5:45 P.M.

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

Business Meeting - 7:40 P.M.

Technical Presentation 8:00 P.M.

## **"NEW TOOLS FOR BIOANALYSIS"**

George M. Whitesides

The 2003 Pittsburgh Analytical Chemistry Awardee

Mallinckrodt Professor of Chemistry

and Chemical Biology Harvard University

### **Abstract**

Biology and biochemistry is facing a new generation of problems in analysis. The interest in analyzing the cell is extending from a primary focus on molecular structure to include broad interest in mechanical structure and phenotypic behaviors. Proteins are replacing nucleic acids as the most important targets for new types of analyses. ADME/Tox is increasingly important in efforts to improve the productivity of the pharmaceutical industry. Presymptomatic detection of disease is a possible approach to the improving the outcome in many diseases. All of these problems, and others, will require new types of analytical systems.

One approach is the development of new tools for bioanalysis is through a combination of the techniques of microfabrication with the problems of biomedicine. We have worked in one part of this problem: that is, the development of new, microfabricated tools for studying the behavior of cells in attached cell culture. A combination of five materials/techniques is providing these tools: 1. Self-assembled monolayers (SAMs) of alkanethiolates on gold, to control the character of interfaces; 2. "Inert surfaces" (surfaces that do not adsorb proteins and therefore do not allow cells to attach); 3. Surface plasmon resonance (SPR), a technique that makes it possible to observe the kinetics and infer the thermodynamics of adsorption of proteins and other biological macromolecules at the surface of SAMs; 4. Soft lithography, to

pattern the interface in its plane; 5. Controlled, laminar flows in microchannels, which provide the basis for methods both of fabrication inside capillaries and for controlling the medium surrounding cells, and the shear they experience. This talk will discuss the use of these tools in bioanalysis.

### **Biography**

Professor Whitesides is a native of Louisville, Ky. He received an A.B. degree from Harvard University in 1960 and a Ph.D. from California Institute of Technology in 1964. He was a member of the faculty of the Massachusetts Institute of Technology from 1963 to 1982. He joined the department of Chemistry of Harvard University in 1982. His research interests include materials science, biophysics, complexity, surface science, microfluidics, self-assembly, micro- and nano-technology, and cell-surface chemistry. Whitesides has received many awards and honors including The World Technology Award for Materials in 2001, the Von Hippel Award in 2000, the Sierra Nevada Distinguished Chemist Award, the Wallace O. Young Innovation Award in High-Throughput Screening, and the Award for Excellence in Surface Science in 1999. Dr. Whitesides has held and currently holds advisory positions on the National Research Council, the National Science Foundation and the Department of Defense.

DINNER RESERVATION: DINNER RESERVATION: Please call Linda Wagner at (412) 825-3220 x000 or e-mail to [wagner@pittcon.org](mailto:wagner@pittcon.org) DO NOT CALL THE SACP OFFICE TO MAKE DINNER RESERVATIONS. Dinner will cost \$8.00, (\$4.00 - Student Affiliate) and checks can be made out to SACP. If you have any dietary restrictions, please let Linda know. Also, should you wish to be placed on a permanent dinner attendance list, leave a message to that effect for Linda at the above number.

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

## Councilor's Corner

Hello Pittsburgh Section Members! In this installment of the "Councilor's Corner" we would like to share some demographic data with you about the Pittsburgh Section of the American Chemical Society. As of December 31, 2002, the Section had 1830 members, 1394 indicating they are male, 373 indicating they are female, and 63 did not select a gender. A total of 65.7% of the membership are classified as "regular" or full ACS members, followed by 13% Emeritus, 9.5% Regular Student, 5.5% Retired, and 6.3% other (Associate, National Affiliate, etc.). Ethnic background data is incomplete with 746 members not indicating ethnicity. Of the remaining members who did indicate ethnic background: 907 Caucasian, 151 Asian, 13 Hispanic, 9 African American, and 4 Native American.

A little over 27% of the membership are age 60 or over, with almost 16% (291 members!) of the membership age 71 or over. Additionally, 12% of the members are 30 and under, leaving the majority 61% between the ages of 31 to 59. Roughly 39% of the members have been associated with the ACS for 5 years or less and approximately 180 members (9.8%) have 50 years or more of service - Congratulations to all of you 50+ year members!

For education background: 1353 members indicated they had a chemistry major, 194 in chemical engineering, 277 Other, and 6 N/A. For chemistry degrees: 731 Doctors, 230 Masters, 714 Bachelors, 15 Other, and 140 N/A. For non-chemistry degrees: 127 Doctors, 136 Masters, 168 Bachelors, 9 Other, and 1390 N/A.

Diversity continues to be an initiative of the ACS, with a focus on enhancing the influx of diverse members into leadership roles within each local section. The national ACS is asking local sections to assess the section's current leadership pool and determine areas where growth in diversity appears to be feasible. Ideally, the leadership team of each local section should resemble the demographic percentages as reported for their respective section.

In this issue you will be asked to vote for section officers. Please use this opportunity to select qualified candidates, with diverse backgrounds, to enhance the diversity and strengthen the Pittsburgh Section. Your participation as a Section member, either by voting in the officer elections or even expressing your willingness to serve as an officer, is critical to achieving the kind of diversity needed to keep the Pittsburgh Section active and growing.

Submitted by Pittsburgh Section Councilors: Paul E. Beck, Richard S. Danchik, V. Michael Mautino (Author), and Theodore J. Weismann

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### 2003 Pittsburgh Section ACS Officers

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Myron Shaffer

#### *Chair-Elect*

Kay Bilal

#### *Secretary*

Neil Donahue

#### *Treasurer*

Tabitha Riggio

Spectroscopy Society of  
Pittsburgh  
*Technology  
forum*

**Duquesne University**

Mellon Science Hall  
5:30 p.m.

**Wednesday**

**September 17, 2003**

**"What is WQED Multimedia"**

by

**Mr. Rick Vacarelli**

**WQED TV**

**Executive Director of Sales  
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# Pittsburgh Area Calendar

## September

- Mon. 8 **Society for Analytical Chemists of Pittsburgh (SACP)**  
Duquesne University, Maurice Falk Hall  
*"Microcapillary and Microfluidic Systems for Single-Cell Analyses"*  
Nancy Allbritton, Ph.D., M.D., Department of Physiology and Biophysics, University of California at Irvine
- Wed. 17 **Polymer Group**  
Duranti's Restaurant  
*"Rheology and Dynamics of Compatibilized Polymer Blends"*  
Dr. Sachin Velankar, Department of Chemical and Petroleum Engineering, University of Pittsburgh
- Wed. 17 **Spectroscopy Society of Pittsburgh**  
Duquesne University, Mellon Hall of Science, Maurice Falk Auditorium  
*Atomic Spectrochemical Measurement Utilizing Fourier Transform, Linear Photodiode Array and Mass Spectrometers*  
Gary Horlick, "2003 Pittsburgh Spectroscopy Awardee", Professor of Chemistry, University of Alberta
- Wed. 17 **Spectroscopy Society of Pittsburgh, Technology Forum**  
Duquesne University, Mellon Hall of Science  
*"What is WQED Multimedia"*  
Mr. Rick Vacarelli, WQED TV, Executive Director of Sales Multimedia/Pittsburgh Magazine
- Tues. 30 **ACS Pittsburgh Chemists Club**  
Duranti's Restaurant  
*"WHODUNIT? Raman Chemical Imaging in BioDefense and Forensics"*  
Dr. Patrick J. Treado, President of Chemimage Corporation, Pittsburgh, PA

## October

- Mon. 6 **Society for Analytical Chemists of Pittsburgh (SACP)**  
Duquesne University, Maurice Falk Hall  
*"New Tools for Bioanalysis"*  
George M. Whitesides, The 2003 Pittsburgh Analytical Chemistry Awardee, Mallinckrodt Professor of Chemistry and Chemical Biology, Harvard University
- 19-22 **2003 Central Regional Meeting**  
Sheraton Station Square, Pittsburgh, PA
- 24-25 **National Chemistry Week Event**  
Carnegie Science Center, Pittsburgh, PA

*The  
Crucible*

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# Pittsburgh Section American Chemical Society Revised 2004 Officer Ballot

Please disregard the ballot in the September 2003 issue of The Crucible. Use the revised ballot on the right. Please place ballot in envelopes provided in the September issue of The Crucible and follow all other printed directions. Additional biographies follow.

## Secretary-Elect

Christine DeNardo

### Christine DeNardo

No biography available at time of printing.

## Councilor

Paul Beck  
Richard S. Danchik  
Brian Strohmeier  
Patricia Wilson

### Paul Beck

Paul E. Beck is a Professor of Chemistry at Clarion University. He received his B.S. degree from Franklin and Marshall College in 1958, and his Ph.D. in organic chemistry from Duquesne University in 1963. He was a Research Chemist with DuPont from 1963-1966 and joined the faculty at Clarion in 1966. He served as department chair from 1974-1984. Dr. Beck has been a member of the Pittsburgh Section since 1966 and has been Secretary-Treasurer, Chairman of the Chemical Education Group (1972-1975). He coordinated the Suburban Lecture Series (1969-73) and was Faculty Advisor to Clarion's Student Affiliate Chapter (1966-73). He served as Section Councilor (1979-82) and Alternate Councilor (1982-1985 and 1993-1996). His research interests are in the area of synthetic organic chemistry and he is a consultant for several companies.

### Richard S. Danchik

Biography listed on the back of this page.

# BALLOT

## For Offices of the 2004 Pittsburgh Section American Chemical Society

### Chair-Elect

CHAIR-ELECT is a three-year term, serving one year as Chair-Elect (during 2004), one year as Chair (during 2005) and one year as Past Chair (during 2006).

(Vote for One)

Neil Donahue.....   
Thomas Sarkus.....

### Secretary-Elect

SECRETARY-ELECT is a two-year term, serving one year as Secretary-Elect (during 2004) and one year as Secretary (during 2005).

.....

(Write -in)

### Treasurer-Elect

TREASURER-ELECT is a two-year term, serving one year as Treasurer-Elect (during 2004) and one year as Treasurer (during 2005).

(Vote for One)

Christine DeNardo.....

### Directors

Directors are three-year terms. Directors serve on the executive committee. One director position will fill a vacancy from 2003 and will thus be for a two year term.

(Vote for Two)

Bodie Douglas.....   
Mordecai Treblow.....   
Robert Witkowski.....

### Councilors

Councilor is a three-year term. One of the elected Councilors will serve a one-year term, to complete a three-year term that is currently vacant. Councilors attend national ACS council meetings.

(Vote for two)

Paul Beck.....   
Richard S. Danchik.....   
Brian Strohmeier.....   
Patricia Wilson.....

### INSTRUCTIONS

Ballot must be placed and sealed in the enclosed blank envelope. Place the blank envelope in the enclosed printed envelope which is addressed to Pittsburgh Section Secretary Neil M. Donahue. Print your return address in upper left hand corner and sign your name on the line provided. Ballots received in any other manner will be disqualified.

**Only members of the Pittsburgh section of the American Chemical Society are eligible to vote. All ballots must be received by the Secretary of the Pittsburgh Section by November 1, 2003.**

## ***Richard S. Danchik***

Dr. Danchik received his B.S. in chemistry from Duquesne University and earned his Ph.D. in Analytical Chemistry from Wayne State University. He joined ALCOA in 1968 in the Analytical Chemistry Division where his research interests included atomic absorption spectrophotometry, electroanalytical techniques, selective ion electrodes and the development of automated process control systems.

In 1979, Dr. Danchik became Manager of ALCOA's Environmental Health Laboratory and had the responsibility for the development of new methodology and instrumentation in the field of industrial hygiene chemistry. He also had the responsibility of managing the development and operation of the Environmental Health Laboratory. He is now consulting in the areas of analytical chemistry, environmental and industrial hygiene chemistry.

Societies: ACS (Councilor-1991 to present;), American Industrial Hygiene Association, American Institute of Chemists (Fellow), ASTM(Fellow)-D-19, Committee on Water Analysis and D-22, Committee on Sampling and Analysis of Atmospheres(Present Chairman-D-22 Committee), Research Society of America (Sigma Xi), Society for Analytical Chemists of Pittsburgh (SACP), Spectroscopy Society of Pittsburgh (SSP), and Phi Lambda Upsilon.

Dr. Danchik was the 1991 Chairman of the Pittsburgh Section of the ACS. He has been actively involved with the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy and was the

1986 Conference President. He has chaired numerous committees for the SSP. He was the 1979-1980 Chairman of the SACP. He is also active in the National ACS and was a member of the International Activities Committee (1991-2000) and is now the Subcommittee Chairman of the Meetings and Exposition Committee. He is a Pittsburgh Section Director for the ACS. He represents the United States on the International Standards Organization(ISO)for Workplace Atmospheres. He has been a member of the Advisory Board of Anal. Chem. and has authored or co-authored a number of technical articles and has previously authored the Nonferrous Metallurgy Review for Anal. Chem. He is also a member of the Editorial Board of the Applied Occupational and Environ. Hygiene Journal.

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