

# The Crucible

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

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## Project SEED in its Third Year at Washington & Jefferson College

Over the course of sixteen weeks, R. Troy Hull II has grown from novice to co-author of a manuscript currently undergoing peer review, and he did it all before he even started his freshman year of college. Troy participated in the eight-week Project SEED program at Washington & Jefferson College during the summers of 2005 and 2006. Currently, Troy is a freshman at West Virginia University, and he plans to major in Chemistry.



The W&J group at Mylan Pharmaceuticals (left to right: Troy Hull, Michael Leonard, Ashley Carbaugh, Laura Tomasevich)

Troy's journey is representative of the mission of Project SEED. The program is designed to engage young scholars in hands-on research at an early stage of their careers. It has been

shown time and again that such experience significantly increases the likelihood that these talented individuals will pursue careers in the chemical sciences. It is imperative for the chemical community to continue support of programs, like Project SEED, that retain talent and enhance diversity in the field.

SEED takes a multi-faceted approach to professional development, with research as the keystone of the program. Using unique synthetic methodology, Troy investigated the preparation of a novel heterocyclic molecule, known as a  $\beta$ -carboline, which is useful as a probe of the benzodiazepine receptor. Troy began this project during the summer of 2005, working in the laboratory of Assistant Professor of Chemistry

Michael Leonard. As anyone engaged in research knows, unexpected results and unsuccessful experiments provide the challenge, frustration, and excitement of day-to-day life in the lab. Troy experienced these trials and tribulations. However, continuing his research during the summer of 2006, he overcame the obstacles and successfully completed his project. Troy's results are included in a manuscript that is currently undergoing the peer-review process. This experience has given Troy insight into the scientific endeavor by following a project from its inception to publication. Troy also presented his results in a poster at Duquesne University's Summer Undergraduate Research Symposium.

Research, however, is only one component of the SEED program. Troy was part of a research group, so he benefited from interaction with other young scientists. Troy and his co-workers, Ashley Carbaugh and Laura Tomasevich (both chemistry majors and members of the W&J class of 2008), took turns presenting their recent results and articles from the current chemical literature during group meetings. Troy presented an article on inhalable insulin as well as a discussion of risk and responsibility in chemical research.

To give the students a glimpse of the opportunities available in the chemical sciences, the W&J group took several field trips in conjunction with the Duquesne

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# 2007 CANDIDATES FOR OFFICE

Pittsburgh Section  
American Chemical Society

The 2006 Nominating Committee of the Pittsburgh Section of the American Chemical Society submits the following slate of candidates for Section office for 2007. 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. Please note that all ballots must be received by Pittsburgh Section Secretary, Leone Hermans-Blackburn, by November 24, 2006. Please follow instructions printed on the ballot. Ballots received in any other manner than what is stated in the instructions will not be accepted.**

## Chair-Elect

Linda Peteanu

### *Linda Peteanu*

Linda Peteanu received her B. S. degree in Chemistry and Biochemistry from Barnard College in New York and subsequently received a Ph.D. in Chemistry from the University of Chicago in 1989. After post-doctoral work at UC Berkeley, she came to Carnegie Mellon University as an Assistant Professor in Chemistry. Linda is now an Associate Professor in physical chemistry who works in the areas of optical spectroscopy and fluorescence microscopy. Her interests and those of her group are very diverse and highly collaborative with ongoing projects both in biophysics and in materials science. In the biophysical area, the group is investigating pre-mRNA splicing on the single molecule level with the eventual goal of understanding the kinetics and mechanism of this critical biological process. We are also involved with the design of novel nano-particle probes for cellular imaging. In the area of materials chemistry, the group is investigating the effects of aggregation on electroluminescent polymers. The ongoing work in the lab has been recognized by an NSF CAREER award and a Special Creativity Extension by the NSF. Linda's teaching interests lie in the areas of physical chemistry and analytical chemistry.

Linda has been a member of ACS for 15 years. She has been involved in the Women Chemists Committee of the local chapter and was one of the organizers of a panel event in late 2003 that was very well attended and was recognized by an award nomination. On the national scale, she was a co-organizer of a symposium entitled "Frontiers in Photobiology" at the March 2005 national meeting in Washington, DC. She has been very active in the Inter-

American Photochemical Society as its newsletter editor from 2001-2006 and currently as the organizer of the upcoming scientific meeting in 2008. In addition, she has held several leadership positions within her University.

## Secretary-Elect

Robert Mathers

### *Robert Mathers*

Robert Mathers is an assistant professor of chemistry at Penn State University, New Kensington. He graduated from North Carolina State University with a B.S. in chemistry. After working for a year as a chemist at LORD Corporation in North Carolina, he entered graduate school. After obtaining a Ph.D. in Polymer Science at The University of Akron, Robert spent two years as a postdoctoral researcher at Cornell University in the Department of Chemistry and Chemical Biology. His research interests include utilizing renewable resources for polymer chemistry and homogeneous catalysis. He has been an ACS member for 6 years.

## Director

Bodie Douglas  
Mordecai Treblow

### *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 the battleship South Dakota 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 Assistant Professor 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. Structure and Chemistry of Crystalline Solids by Bodie Douglas and Shih-Ming Ho was published by Springer in June, 2006.

*Bios Continued on Page 5*

**SURPRISE**

our editor by calling and saying you appreciate the quality and content of our newsletter. Our editor works hard to maintain a publication of interest to our membership. Oh, and by the way you could also give credit to our advertisers who financially support us.

**BALLOT**  
**For Offices of the**  
**2007**  
**Pittsburgh Section**  
**American Chemical Society**

**Chair-Elect**

*(Vote for One)*

Linda Peteanu.....

**Secretary-Elect**

*(Vote for One)*

Robert Mathers .....

**Directors**

*(Vote for one)*

Bodie Douglas.....

Mordecai Treblow.....

**Councilors**

*(Vote for one)*

Richard Danchik .....

James Manner.....

**INSTRUCTIONS**

Ballot must be placed and sealed in the enclosed blank envelope. Don not write on the blank envelope. Place the blank envelope in the enclosed printed envelope which is addressed to Pittsburgh Section Secretary, Leone Hermans-Blackburn. **Print your return address in the 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 24, 2006.**



## Director's Bios Continued from Page 2

### *Mordecai Treblow*

BA (University Pennsylvania), MS (Penn State University), PhD (University of Pittsburgh) all chemistry. Half career academic; half industrial. Retired - Mead Corp. Industrial positions include: Calgon Corp. (Senior Chemist); Rohm & Haas (Junior Chemist). Academic: Bloomsburg State University (Associate Professor); Mercy College, Detroit (Associate Professor; Chair, Physical Sciences). Authored or co-authored 12 papers, mainly chemical education; presented 10 papers at national, regional, international meetings.

Pittsburgh Section: Active since 1979. Committees: Chair, Professional Relations/Employment (1991-99, 2001-04); ACS Affairs (1997-02), Membership (1982-83). Committee member: Long Range Planning; Finance (Chair, 2004) Organized, Chaired (1996-97) Retired Chemists Group, merger with Pittsburgh Chemists Club. Pittsburgh Section Councilor (1984-92; 1997-2002).

National ACS: Member since 1956. ACS Board of Directors, District-II (1992-95). ACS Council committees: Local Section Activities (2001-02) Professional Relations (1984-89); Membership Affairs (1998-2000); Divisional Activities (1991-92).

ACS Divisions: Chair Cycle Division Professional Relations (1990-92). Current PROP; Nuclear Chem. and Technology; Fuel Divisions. Member SACP (active), SSP, American Association Textile Chemists and Colorists.

Received 1998 Chairman's Award for "Outstanding Service to the Pittsburgh Section"; 2004 Chair's Award for "Outstanding Contributions and Guidance to Pittsburgh Section."

ISSUES: Mordecai has been and continues as a strong advocate for equality for women chemists nationally and locally. He is an ongoing advocate for strengthening Federal support for energy R&D; activist for economically sound, scientifically accurate ACS federal energy policy. Strong supporter of professional and economic needs of chemists in national ACS. Problem for Section: Recruiting and developing leadership corps.

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

### Councilor Richard Danchik James Manner

#### *Richard Danchik*

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

Dr. Danchik was the Manager of ALCOA's Environmental Health Laboratory (EHL) 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 EHL to assure high standards of technical performance and reliability of reported results. He is now consulting in the areas of analytical chemistry, environmental and industrial hygiene chemistry.

Societies: American Chemical Society (Councilor-1991 to present;), American Industrial Hygiene Association, American Institute of Chemists (Fellow), American Society for Testing Materials (Fellow)-D-19, Committee on Water Analysis and D-22, Committee on Air Quality (Chairman-2000 to 2005), Research Society of America, SACP, SSP, and Phi Lambda Upsilon.

Dr. Danchik was the 1991 Chairman of the Pgh. Section of the ACS. He has been actively involved with PITTCON and was the 1986 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 is a member of the International Activities Committee (1991-2000; 2005 to present) and is also the Subcommittee Chairman of the Exposition Committee. He was a Pittsburgh Section Director for the ACS (1992-2004). He represents the U.S. on the International Standards Organization (ISO) for Air Quality. He has been a member of the Advisory Board of Analytical

Chemistry and has authored numerous technical articles and has previously authored the Nonferrous Metallurgy Review for Analytical Chemistry. He was also a member of the Editorial Board of the Applied Occupational and Environmental Hygiene Journal.

Rich is also an avid musician (accordionist) and plays in a combo, enjoys gardening and attempts to play a round of golf occasionally.

#### *James Manner*

Jim graduated from Bowling Green State University in 1961 with a B.S. degree in Chemistry. He received his M.S. from Michigan State University in 1963 where he joined PPG Industries. In 1968 he took a two year leave of absence to finish his Ph.D. from The University of Akron in 1971. Jim retired from PPG Industries in 2000 after 37 ½ years as a Senior Research Associate. Jim's work resulted in 13 U.S. and 12 foreign patents and he was recipient of the Barberton Technical Center Outstanding Professional Accomplishments in 1979. Jim was transferred from Barberton, Ohio to the PPG Monroeville Technical Center in 1989. Jim is married and has two adult children.

Jim has been a member of the American Chemical Society for 43 years. He was very active in the Akron Section and was a meetings chairman of the Akron Section and Chair in 1989. Jim recently was treasurer of the Pittsburgh Section of ACS in 2004. Chair Elect in 2005 and is the current Chair (2006).

Jim joined both SSP and SACP in 2000 and served over the years as a member of several committees in both of the societies. In SACP he has been chairman of Starter Grant's in 2003, 2004 and 2005 and chair of Continuing Education in 2005. He has served on various CWS committees and as a Presider at Pittcon meetings since 2001.

**Ballots must  
be received by  
November 24,  
2006!**



**AMERICAN CHEMICAL SOCIETY**  
**Pittsburgh Section**  
**PITTSBURGH AWARD**

*Honoring 2006 Pittsburgh Award Recipient*  
**Dr. Dennis P. Curran**

**November 30, 2006**  
Pennsylvania Athletic Association  
4215 5<sup>th</sup> Ave.  
Pittsburgh, PA

Social Hour 6:00-7:00 PM  
Dinner 7:00 PM  
Approximately \$40.00/person  
Parking is Valet, \$5.00/car

**Registration Form: Make Checks payable to Pittsburgh Section ACS**

Name \_\_\_\_\_

Address \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

E-mail \_\_\_\_\_

Mail to : Christine Mastromatteo; 16248 Heberton Dr. Verona, PA 15147  
by November 17, 2006, Mastromatteo@pittcon.org

*ACS Pittsburgh*  
*Chemists Club*

Pittsburgh Section, American  
Chemical Society

**Tuesday, November 28, 2006**

*"Transportation Fuels  
from Coal"*

by

Bruce Beaver

Professor of Chemistry  
Duquesne University

**Duranti's Restaurant**

128 N. Craig St., Pittsburgh, PA

6:00 PM

Cocktail Time - Cash Bar

7:45 PM Dinner

8:00 PM Program

For reservations, please call Ed Martin by noon, Friday, November 24, 2006 at (724) 335-0904 or e-mail at [esm@icubed.com](mailto:esm@icubed.com).

This lecture will be an overview of the current national effort to produce transportation fuels from coal. The topics covered will include economic and environmental issues in addition to the chemistry involved in making future clean fuels from coal.

**Biography**

Bruce Beaver earned his doctorate in organic chemistry with William McEwen at the University of Massachusetts at Amherst in 1984. Bruce was introduced to fuel chemistry during a 2 year National Research Council Postdoctoral fellowship at the Naval Research Laboratory in Washington DC under the direction of Bob Hazlett. For the last 20 years Bruce has been on chemistry faculty at Duquesne University. For the last 6 years Bruce has had a concurrent appointment at the Energy Institute at the Pennsylvania State University. In addition to interest in fuel chemistry Bruce also has a research program on understanding the chemistry of oak aging of fine wines.



# Society for Analytical Chemists of Pittsburgh



## November Meeting

Monday, November 6, 2006

Duquesne University, Maurice Falk Hall

### *“Plasmon Rulers for Measuring Dynamical Distance Changes in Biological Macromolecular Assemblies”*

A. Paul Alivisatos, Ph.D.

University of California, Berkeley

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

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

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

The intensity and spectral signature of light scattering from Au nanocrystals depends strongly upon their separation. This phenomenon can be used to construct a spectroscopic ruler for monitoring the assembly and deformations of macromolecular complexes. More advanced arrangements consisting of groups of several nanocrystals are also under construction.

#### **Bio:**

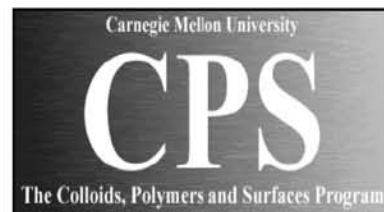
Paul Alivisatos attended the University of Chicago, where he received a Bachelor's degree in Chemistry with Honors in 1981. He continued his graduate studies at the University of California, Berkeley, where he worked under the supervision of Charles Harris. His Ph.D. thesis concerned the photophysics of electronically excited molecules near metal and semiconductor surfaces. In 1986, he went to AT&T Bell Labs where he worked with Louis Brus as a postdoctoral, and it was at this time that he first became involved in research related to Nanotechnology. In 1988, he joined the faculty of the University of California, Berkeley, where he is presently Professor of Chemistry and Materials Sciences. He has received the Alfred P. Sloan Foundation fellowship, the ACS Exxon Solid State Chemistry Fellowship, the Coblenz Award, the Wilson Prize at Harvard, the Materials Research Society Outstanding Young Investigator Award, the ACS Award in Colloid and Surface Chemistry (2004), the Rank Prize (2006), and the University of Chicago Distinguished Alumni Award (2006). He is a Fellow of both the American Physical Society and the American Association for the Advancement of Science. In 2004, he was elected into the National Academy of Sciences and the American Academy of Arts and Sciences. He is the Editor of the American Chemical Society Journal and Nano Letters. He is a senior member of the technical staff at the Lawrence Berkeley National Laboratory, where he has been appointed Associate Laboratory Director for Physical Sciences and where he also serves as Director of the Materials Sciences Division. His research concerns the structural, thermodynamic, optical, and electrical properties of colloidal inorganic nanocrystals. He investigates the fundamental physical and chemical properties of nanocrystals and also works to develop practical applications of these new materials in biomedicine and renewable energy.

**Dinner Reservations:** Please e-mail Rita Windisch at [windisch@pittcon.org](mailto:windisch@pittcon.org), by Thursday, November 2, 2006 to make dinner reservations. Rita's preference for reservations is an e-mail. Should you not have e-mail, please call the SACPA Administrative Assistant at 412-825-3220 ext 204. If you want to be placed on the permanent dinner list, please let Rita know when you RSVP. Dinner will cost \$8 (\$4 for students) and checks can be made out to the SACPA. If you have any dietary restrictions, please let Rita Windisch know when you leave message.

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

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

## 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, 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 Spring 2007 enrollment are now being accepted. Classes begin January 15 2007, and new students may enroll in the entry-level course, Physical Chemistry of Colloids and Surfaces.

#### **For additional information, please 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](mailto:jacobson@andrew.cmu.edu)  
[www.cheme.cmu.edu/prospective/mscps/](http://www.cheme.cmu.edu/prospective/mscps/)

# Report on: ACS FALL 2006 NATIONAL MEETING San Francisco, CA

All four of our ACS Pittsburgh Section Councilors were in attendance at San Francisco.

The meeting attracted over 15,000 attendees and featured over 9000 scientific presentations and an exposition of 500 booths.

The following candidates were selected for President-Elect for 2007:

- Bruce E. Bursten
- Bassam Z. Shakhshiri
- Yorke E. Rhodes
- James A. Walsh

The Committee on Meetings & Expositions reported that the total meeting registration was 15,603. Of these, 9,373 were regular registrations, 1,666 were exhibitors, 3,350 were students, 504 were exposition only, and 510 guests. The exposition had 320 companies represented in 500 booths.

In San Francisco, 1,202 job seekers registered with the NECH with interviews scheduled for 290 positions from 114 employers.

The Pittsburgh Section won a ChemLuminary Award for our National Chemistry Week Programs.

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 Committee on Meetings and Expositions reported that the national meeting financial targets continue to be met, and therefore recommended to the Board of Directors that there be no increase in national meeting registration fees for 2007.

The Council received three petitions for consideration: Petition on Election Procedures 2006; Petition on Multi-Year Dues; and a Petition on Rules for Nominating Members of Nominations and Elections for National Offices. Action is expected on these petitions at the 2007 spring national meeting in Chicago.

The Council voted to continue the Committee on Public Relations and Communication, the Committee on Environmental Improvement, and the Committee on International Activities subject to the concurrence by the Board of Directors. The Council voted to support the request of the Committee on Community Activities that its status be changed from an "other committee" of the Board to a joint Board-Council Committee. The purpose of the Committee on Community Activities is to improve the public perception of chemistry by providing programs to connect chemists with their communities.

The Committee on Membership Affairs reported that through August 2006, a record 12,137 new applicants have been added to the Society's membership, and that the Member-Get-A-Member campaign is well on its way to the goal of 1,000 new members this year.

A special discussion was held at the Council Meeting that focused on ensuring the American Chemical Society's future by engaging younger members throughout the Society's volunteer leadership. Results of a councilor survey on the topic were reported and many councilors offered useful comments and suggestions,

The Committee on Economic and Professional Affairs submitted its latest version of the Chemical Professional's Code of Conduct for Council review. This document offers guidance for Society members in various professional dealings, especially those involving potential conflicts of interest.

The Board through the Committee on Budget and Finance, voted to approve funding requests for the Society's Green

Chemistry Institute and for workshops with Hispanic and Native American-serving institutions and to include these funding amounts in the Society's 2007 proposed operating budget.

The Board voted the following:

•To approve revisions to the Guidelines for Society Cosponsorships with other organizations.

•To proceed with "phase one" plans to arrange the 2008 ACS/AICHe joint meeting, which involves working within the framework of the cosponsorship guidelines, engaging the support of the relevant technical divisions, and developing a suitable budget.

•To approve the request for cooperative cosponsorship of Pacificchem 2010, to be held December 14-19, 2010, in Honolulu, Hawaii, contingent upon approval of an acceptable budget for the conference.

SOCED reported strong participation in the Societies undergraduate research effort with 1,188 research poster papers presented covering the following fields of Chemistry: Analytical, Biochemistry, Chemical Education, Environmental, Inorganic, Nanotechnology, Organic, Physical and Polymer.

On the recommendation of the Committee on Planning, the Board voted to adopt a revised ACS mission statement: To advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people.

Respectfully Submitted,  
Richard S. Danchik (Author)  
Michael Mautino  
Theodore Weismann  
Mildred Perry  
Pittsburgh Section Councilors



POLYMER GROUP  
Pittsburgh Section  
American Chemical Society

**November 8, 2006**

Duranti's Restaurant  
128 N. Craig St.

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

**“Kinetics and Novel System of  
Living Radical Polymerization”**

Atsushi Goto  
Institute for Chemical Research, Kyoto University, Japan

The last decade has witnessed the rapid development of living radical polymerization (LRP). It allows fine control in chain length and its distribution and fine synthesis of homo- and co-polymers with complicated topologies, while it retains the advantages of radical polymerization, i.e., simplicity, robustness, and monomer versatility, opening up the creation of novel materials unattainable by other polymerizations. There are currently several variants of LRP, which include nitroxide-mediated polymerization (NMP), atom transfer radical polymerization (ATRP) using transition metals catalysts such as copper catalysts, and dithioester-mediated (RAFT) polymerizations, for example.

The seminar will concern the kinetics and mechanisms of LRP. Fundamental kinetic features of LRP will comprehensively be surveyed by presenting theories on polydispersity index (PDI) and polymerization rate and experimental investigation into individual LRP systems: the activation rate constant of the dormant species, which is a fundamental parameter for determining PDI, will be summarized for various LRP systems, and the characteristic polymerization rate behaviors for NMP, copper-catalyzed ATRP, and RAFT polymerization will be discussed. Besides the kinetic studies, a new class of LRP, germanium-catalyzed LRP, which we recently developed, will also be presented. This is the first LRP using a non-transition metal as a catalyst, and is characterized by the remarkably high reactivity of the catalyst and the robustness of the polymerization.

**For dinner reservations please contact Nick Tsarevsky 412-268-1872; e-mail: nvt@cmu.edu no later than Tuesday, November 7, 2006. The cost of dinner is \$19.00 per person; discount rate of \$11.00 for retirees; no charge for students. All are welcome!**



**Wednesday  
November 15, 2006**

***“The Rise of Photography  
in the Civil War Era”***

by  
Michael Kraus  
Soldiers and Sailors National  
Military Museum Memorial

“The Rise of Photography in the Civil War Era” will be the topic of a presentation by Michael Kraus. Photography was invented in the late 1840's and by the time of the Civil War passed through several advances which made it popular and affordable to the general population, and a key element in how modern historians interpret the era. Kraus will discuss the processes and bring examples to display as well as provide information as to the care and archiving of these important artifacts.

**Bio:** Currently the Curator of Collections at Soldiers and Sailors National Military Museum Memorial, Michael Kraus also wears many other hats. Kraus graduated from Edinboro University in 1976 with a Fine Arts degree, majoring in stone pulled lithography, adapting his interest and talent after graduation to sculpture, where he spent the past 18 producing, marketing and selling works of art in bronze and in stone.

Beginning in childhood Kraus had a fascination with the Civil War, and through the interactive guidance of a junior high school teacher, began to collect Civil War artifacts in the mid 1960's. Using decades of experience gathered in the field of collecting, Kraus has combined his interest in art and history into a unique career.

Michael Kraus is also recognized in the Civil War community as an authority not only in artifacts, but is well known as a re-enactor, attending his first event in 1966, and continues today as Captain of the 116<sup>th</sup> Pa. Volunteer Infantry, Company “I”, Irish Brigade. Utilizing this experience Kraus was hired as a historical on set consultant for several major Hollywood films, “Gettysburg” in 1993 and “Cold Mountain” in 2003, and co-writes a nationally distributed documentary DVD series on the war titled “Civil War Minutes” which has been broadcast on PBS.



# SPECTROSCOPY SOCIETY OF PITTSBURGH



**November Meeting**  
**Wednesday, November 15, 2006**

**Duquesne University,**  
**Mellon Hall of Science**  
(Maurice Falk Hall)

6:00 PM - Social Hour, 6:30 PM -Dinner  
(City View Cafe - 6<sup>th</sup> Floor)  
8:00 PM - Business Meeting  
8:15 PM - Speaker's Presentation

*“Adventures in Chemical Microscopy: Analysis of Dispersed  
Particles and Single Molecules”*

**Dr. Joel M. Harris**  
**University of Utah**

Recent breakthroughs in optical microscopy instrumentation are allowing chemical analysis to be carried out with unprecedented spatial resolution (in fL volumes) and sensitivity (at the single-molecule level). To investigate the chemistry of small suspended particles in liquids, ‘optical tweezers’ that employ tightly focused laser light for optical trapping are combined with Raman-scattering microscopy for single-particle chemical analysis. Sub-micrometer-sized particles can be trapped and observed for hours allowing changes in chemical structure to be followed over time. Applications of this method to investigate solid-phase chemical synthesis and the structure of phospholipid vesicles will be presented. As the detection limits of fluorescence microscopy has reached the single-molecule level, the quantitative analysis of molecular populations can be based on counting single-molecule events. Isolated reaction sites on a surface can be imaged, and discrete binding and unbinding events of single molecules can be monitored as ‘movies’ of reversible chemical reactions. Binding isotherms and equilibrium constants are determined without standardization, and rates of binding and unbinding are determined directly from histograms of on-off times in the fluorescence images. The experiment is massively parallel where hundreds of reactive sites undergo dozens of reactions during a single observation.

## ***Bio***

Joel M. Harris received his B.S. degree from Duke University in 1972 and a Ph.D. from Purdue University in 1976. That same year, he was appointed to the faculty of the University of Utah, where he has taught for the past 30 years. Harris’s research has focused on analytical chemistry and spectroscopy of trace-level species in liquids and at liquid/solid interfaces. He and his students have developed photothermal spectroscopy methods, multidimensional analysis of time-resolved spectroscopic data, and single-molecule counting techniques. They have pioneered surface-selective methods for investigating interfacial molecular transport, adsorption, and binding in chemical analysis and separations. Harris is a Fellow of the American Association for the Advancement of Science and of the Society for Applied Spectroscopy. He is the recipient of an Alfred P. Sloan Fellowship, the Coblenz Award in Molecular Spectroscopy, the University of Utah Distinguished Research Award, the ACS Division of Analytical Chemistry Award in Chemical Instrumentation, the SAS New York Section Gold Medal Award in Spectroscopy, the Pittsburgh Analytical Chemistry Award, the ACS Utah Award in Chemistry, and the ACS Award in Analytical Chemistry. He is currently Editor-in-Chief of Applied Spectroscopy. Foundation Antarctic Service Medal, and has the honor of having a minor planet named after him - Minor Planet 6030-Zolensky. He also has over 400 publications.

**Dinner Reservations:** Please call John Koczko at (412) 655-8497 or e-mail [jpk@unitysystems.com](mailto:jpk@unitysystems.com) to make dinner reservations NO LATER THAN FRIDAY, November 10, 2006. Dinner will cost \$8 and checks can be made out to the SSP. If you have dietary restrictions, please let John know when you RSVP.

**Parking Instructions:** The Duquesne University Parking Garage is located on Forbes Avenue. Upon entering the garage, receive parking ticket and drive to upper floors. Pick up a parking chit at the dinner or meeting. If any difficulties arise, contact Dr. Mitch Johnson at Duquesne University.

## Pittsburgh Section Wins Seventh Consecutive ChemLuminary Award



This past September, during the 232<sup>nd</sup> American Chemical Society (ACS) National Meeting held in San Francisco, the Pittsburgh Section was the recipient of an ACS ChemLuminary Award for its 2005 National Chemistry Week (NCW) program. The Section received an award in the “Outstanding Event for a Specific Audience” category. The Pittsburgh Section’s NCW program continues to focus on reaching out and ensuring the participation in NCW activities of underrepresented “at-risk” minorities from the Pittsburgh metropolitan area, by helping them overcome economic and transportation barriers. The Section also received a certificate of recognition for being a finalist in the “Outstanding Ongoing NCW Event” category.

This was the Pittsburgh Section’s seventh consecutive NCW related ChemLuminary award. Previously, the Pittsburgh Section has been recognized for its NCW community outreach efforts by the ACS’s Committee on Community Activities with ChemLuminary Awards in the following categories; “Greatest Increase in Membership Involvement” in 1999,

“Greatest Community Involvement” in 2000 and 2004, “Outstandingly Creative and/or Unique Event” in 2001, and “Best Event with Underrepresented Minority Groups” in 2002 and 2003.

The Pittsburgh Section’s 2005 National Chemistry Week (NCW) event was held at the Carnegie Science Center on Friday and Saturday, October 21-22, 2005. The theme for the 2005 celebration was “The Joy of Toys.” There were 266 volunteers from twenty-four groups and organizations, conducting hands-on experiments, activities, and demonstrations. There were several theater-style shows presented in the various Science Center stages, including PPG Industries’ demonstration titled “Reaction in Action.” Total attendance for the two-day event was approximately 4300.

The Pittsburgh Section would like to thank its sponsors including the Bayer Corporation, the Carnegie Science Center, the Society For Analytical Chemists of Pittsburgh, and The Spectroscopy Society, for their generous and on-going support of the Section’s NCW program. Thanks also go to the over 266 volunteers who participated in the 2005 NCW celebration. Without the support and commitment by the sponsors, the many dedicated volunteers, and the community, the Pittsburgh Section’s annual NCW activities would not be possible.

*Submitted by: V. Michael Mautino,  
NCW Coordinator*

## POLYMER GROUP Pittsburgh Section American Chemical Society

The Polymer group invites nominations or self-nominations for officers (Chair, Treasurer, and Secretary) for the year of 2007. If interested or to nominate a colleague, please send an e-mail expressing your interest to the Chair, Nick Tsarevsky (nvt@cmu.edu), or the Secretary, Ke Min (kemin@cmu.edu). Questions should be addressed to the named officers as well.

### Graduate Student Research Night and ACS Pittsburgh Section Student Award: Call for Abstracts

The Polymer group invites graduate students conducting polymer-related research to participate in the Pittsburgh Section of ACS Graduate Student Research Night (to take place in January 2007).

All students who submit an abstract and resume no later than December 20, 2006 will be invited to prepare and present a poster of their work at the January meeting of the ACS Polymer Group. From all abstracts submitted by the deadline, one student will be chosen by a panel of professionals from Academia and Industry to give a technical presentation on their graduate research. This student will be awarded with a certificate signifying the honor of being the ACS Polymer Group 2007 Student Award Winner in addition to a \$150 prize.

All students presenting posters at the meeting will be provided with free dinner and will be reimbursed up to \$20 for the cost of assembling their poster (receipts MUST be provided). Posterboards will be supplied by the polymer group and will be of standard ACS presentation size.

To register your poster and be eligible for the \$150 Award and Presentation, please submit a title and short abstract of your research along with a brief resume to the Polymer group Chair, Nick Tsarevsky (nvt@cmu.edu) no later than Wednesday, December 20, 2006. Any questions should be addressed to Nick Tsarevsky.

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## ENERGY TECHNOLOGY GROUP

Pittsburgh Section

American Chemical Society

Thursday, November 16, 2006

### “The Birth of the Oil Industry in Western Pennsylvania”

by  
Al Mann

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11:30 am	Networking-Cash Bar
12:00 noon	Luncheon
1:00 pm	Presentation

All are welcome! Please plan to attend. For reservations, call Christina at 412-386-4484 (for Tom Sarkus) by noon on Friday, November 10, 2006.

It is common knowledge that the world's first oil well was drilled in Titusville, PA in 1859. But, did you know that the first oil refinery was built in Pittsburgh? Even before Drake's oil well was drilled, petroleum was gathered at natural seeps, and it was an “unwelcome byproduct” of salt wells drilled throughout the region. Enterprising settlers burned the crude oil in lamps, thickened it with flour to grease wagon wheels and machinery, and even used it as a topical ointment for medicinal purposes. But, burning crude oil in lamps produced thick black smoke and unpleasant odors. So, in 1850 Samuel Kier built a small refinery at Seventh & Grant Streets in Downtown Pittsburgh to distill petroleum into lamp fuel, which he called “carbon oil.”

Western Pennsylvania possesses a rich heritage in the energy industries, with achievements in the broader areas of chemistry and technology in general. To commemorate the birth of the oil industry in western Pennsylvania, a chemical Landmark nomination is being prepared for submittal to the National ACS. Please come to learn more about the scientific history of western Pennsylvania's oil industry, to discuss the status of the pending Landmark designation, and to brainstorm ideas for additional chemical Landmark nominations rooted in the rich technological history of western Pennsylvania.

#### Biography

Al Mann recently retired from Parsons Corporation as a support contractor to the National Energy Technology Laboratory in Pittsburgh, where he had worked for 15 years. Previously, Al spent over 25 years at Gulf Research and Development Company, also in Pittsburgh, where he served as Director of Process Economics. Al earned his B.S. at Cornell University and his M.S. at the University of Pittsburgh, both in Chemical Engineering. He is currently involved in commercializing a process for upgrading low-rank coals. Among his hobbies, Al has studied and written about genealogy and local history.

**December Meeting:** Watch for details in the December issue of The Crucible!

## Project Seed Continued from Page 1

University SEED program, which is directed by Assistant Professor of Chemistry Jennifer Aitken. The students toured Mylan Pharmaceutical's quality control and manufacturing divisions in Morgantown; LabChem's facility specializing in the distribution of cataloged and custom-manufactured laboratory chemicals; PPG's Monroeville site including their Teslin, Photochromics, Analysis, and CMP labs; and Bayer's polyurethane R&D facility.

Troy also benefited from two speakers who visited the research group at W&J. Gilbert Floyd (W&J class of 1991) provided the students with an overview of careers in pharmaceutical sales at Pfizer, and Mari Lynne Starr (W&J class of 2005) discussed career opportunities in sales with Fisher Scientific. Hearing not only about the careers themselves but also about each individual's journey to his or her current position is tremendously enriching for the students.

As Troy embarks on his college career at WVU, his experience in the W&J SEED program will serve him well. He enters college with a broad and mature perspective of the field of chemistry. He is acutely aware of the opportunities available to him and expects that he will build a rewarding career within the chemical sciences. This program would not have been possible without generous support from the Project SEED Endowment, Ferro Corporation, Westinghouse, Bayer MaterialScience LLC, PPG Industries, Eastman Chemical Company, and LabChem, Inc. We would also like to thank Tabitha Riggio, chair of the committee on Project SEED for the Pittsburgh Section of the ACS, for the integral role that she plays in fundraising for and supporting of these programs.

*Submitted By Michael Leonard*



## Pitt Scientists Help Bring World's Smallest Test Tubes 'From the Lab to the Fab'

Yates to present highlights of nanotube research  
at American Chemical Society meeting

PITTSBURGH—Just by picking up the phone, Nobel Laureate and nanotube pioneer Richard Smalley convinced University of Pittsburgh R.K. Mellon Professor of Chemistry and Physics John T. Yates Jr. to enter the field of nanotube surface chemistry. “Rick Smalley’s phone call resulted in six years of exciting work,” says Yates, who will present highlights of research done at Pitt during a Presidential Event honoring Smalley September 11 at the 232<sup>nd</sup> American Chemical Society (ACS) National Meeting in San Francisco, Calif.

In collaboration with J. Karl Johnson, who is the William Kepler Whiteford Professor of Chemical Engineering at Pitt, Yates has extensively investigated the use of single-walled carbon nanotubes (SWNTs) as tiny test tubes. SWNTs are cylindrical molecules with a diameter equivalent to about three atoms. The tube walls are made of a single curved sheet of carbon atoms. Experimenting at such a small scale presents many challenges, but offers big rewards: “Doing chemistry inside of nanoscale test tubes allows one to probe the role of extreme molecular confinement on chemical behavior,” says Yates, who also directs Pitt’s University Surface Science Center.

In the mid-1990s, Smalley recognized that SWNTs would likely be excellent adsorbents because of the enhanced attractive forces expected for molecules located inside the nanotubes. Yates has developed novel methods to measure the relative number of inside and outside molecules attracted to the nanotubes, while Johnson checks experimental results and provides more details through theoretical molecular modeling than could be provided by experiments alone.

Yates and Johnson, along with their students and postdoctoral fellows, obtained a striking result for water molecules confined inside SWNTs, as reported in a recent paper in the *Journal of the American Chemical Society*. The water molecules inside nanotubes bond together into rings made of seven water molecules. Yates and Johnson, who also are researchers in Pitt’s Gertrude

E. and John M. Petersen Institute of NanoScience and Engineering, found that these rings stack like donuts along the nanotube. The rings themselves are bound together by a new type of hydrogen bond that is highly strained compared to the hydrogen bonds within each molecular “donut.”

The researchers first detected this novel hydrogen bond experimentally by its unusual singular vibrational frequency and later deduced its character by modeling. “The behavior of water as a solvent inside of nanotubes will probably differ strongly from its behavior in ordinary water based on the donut configuration and the new kind of hydrogen bond discovered in this work,” says Yates.

In another development, research showed that reactive molecules confined inside nanotubes are well shielded by the nanotube walls from reacting with active chemical species like atomic hydrogen, one of the most aggressive chemical reactants in the chemist’s toolbox. The work suggests that chemists could keep certain molecules from reacting by storing them inside nanotubes, while molecules outside the tube are free to react. “This could provide a new tool for focusing reactive chemistry in the laboratory to select one molecule and exclude

another one, tucked away inside of a nanotube,” Yates says.

The researchers’ pioneering work could lead to future SWNT-based technologies such as time-release medications and highly efficient gas masks to decontaminate toxic gases. In addition, their research promises to yield new insights into basic chemistry. “Confining matter inside of nanotubes could lead to a range of new chemical and physical properties for the confined molecules, allowing chemists a higher degree of control of molecular behavior,” says Yates.

Pitt’s Petersen Institute of NanoScience and Engineering is an integrated, multidisciplinary organization that brings coherence to the University’s research efforts and resources in the fields of nanoscale science and engineering. For more information, visit [www.nano.pitt.edu](http://www.nano.pitt.edu).



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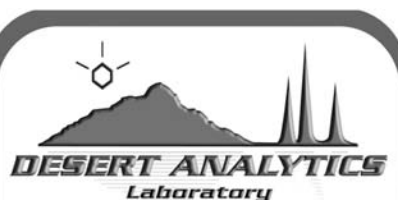
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# Pittsburgh Area Calendar

## November

- Mon. 6 **Society for Analytical Chemists of Pittsburgh (SACP)**  
*“Plasmon Rulers for Measuring Dynamical Distance Changes in Biological Macromolecular Assemblies”*  
A. Paul Alivisatos, Ph.D., University of California, Berkeley
- Wed. 8 **Polymer Group, Pittsburgh Section ACS**  
Duranti’s Restaurant  
*“Kinetics and Novel System of Living Radical Polymerization”*  
Atsushi Goto, Institute for Chemical Research, Kyoto University, Japan
- Wed. 15 **Spectroscopy Society of Pittsburgh (SSP) Technology Forum**  
Duquesne University, Mellon Hall of Science, Maurice Falk Hall  
*“The Rise of Photography in the Civil War Era”*  
Michael Kraus, Soldiers and Sailors National Military Museum Memorial
- Wed. 15 **Spectroscopy Society of Pittsburgh (SSP)**  
Duquesne University, Mellon Hall of Science, Maurice Falk Hall  
*“Adventures in Chemical Microscopy: Analysis of Dispersed Particles and Single Molecules”*  
Dr. Joel M. Harris, University of Utah
- Thur. 16 **ACS Pittsburgh Energy Technology Group**  
More Restaurant  
*“The Birth of the Oil Industry in Western Pennsylvania”*  
Al Mann
- Tue. 28 **ACS Pittsburgh Chemists Club**  
Duranti’s Restaurant  
*“Transportation Fuels from Coal”*  
Bruce Beaver, Professor of Chemistry, Duquesne University
- Thur. 30 **Pittsburgh Award Dinner**  
**Pennsylvania Athletic Association**

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