

# **PUGET SOUND CHEMIST**

BULLETIN OF THE PUGET SOUND SECTION OF THE AMERICAN CHEMICAL SOCIETY

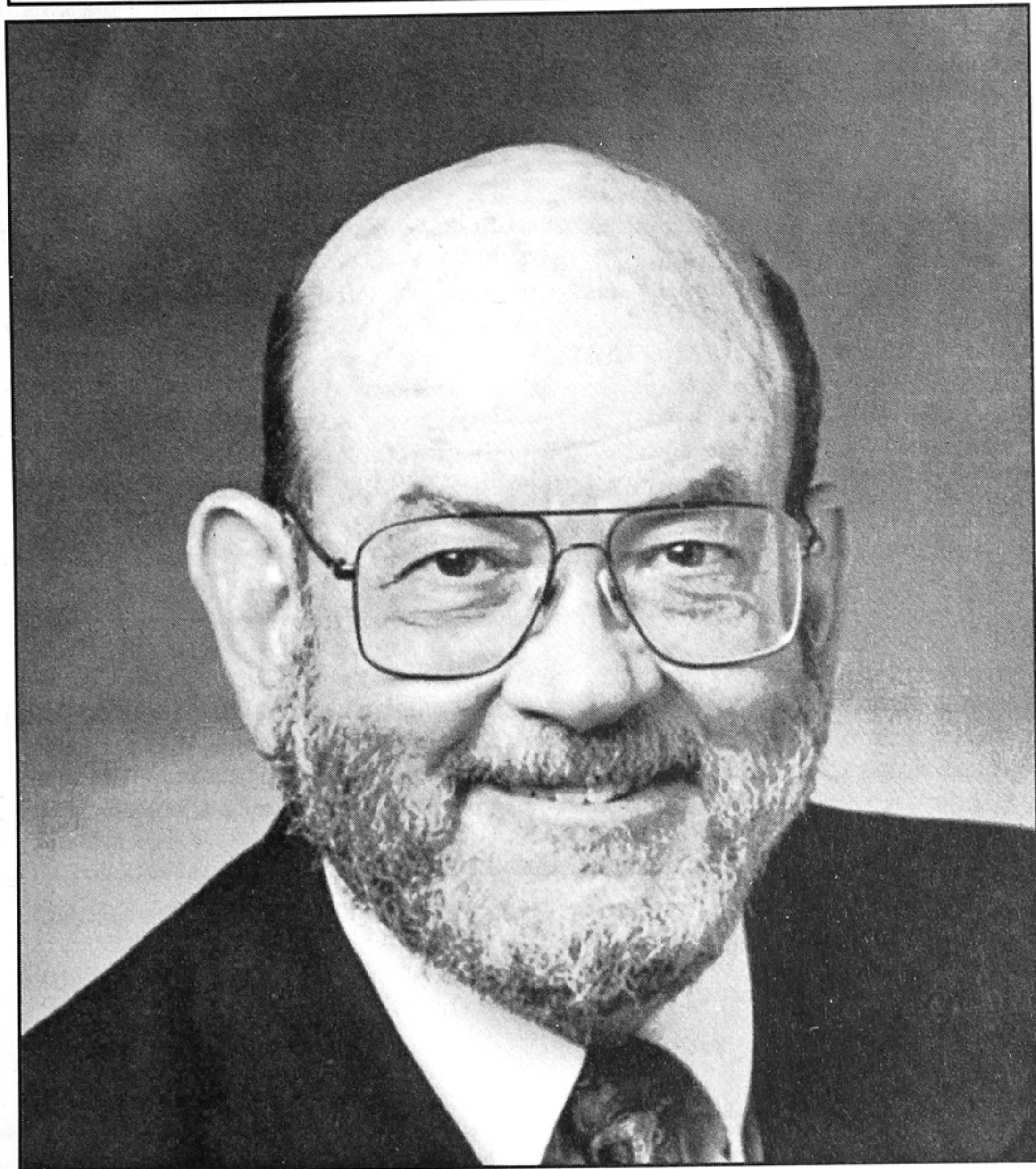
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**Volume 63, Number 5**



**September 2002**

**John I. Brauman Named  
2002 Linus Pauling Award Medalist**





# PUGET SOUND CHEMIST

Newsletter for the Puget Sound Section



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Executive committee meetings are open to all members and are held on the second Wednesday of each month (unless otherwise indicated) at 6:30 p.m. in room 2430C (above the bookstore) at North Seattle Community College, 9600 College Way North in Seattle. The next meeting is **Wednesday, September 11th**.



## JOHN I. BRAUMAN NAMED 2002 LINUS PAULING AWARD MEDALIST

The ACS Oregon, Portland, and Puget Sound Sections have named Dr. John I. Brauman the recipient of the 2002 Linus Pauling Award. Dr. Brauman is the J.G.Jackson - C.J.Wood Professor of Chemistry at Stanford University. The Linus Pauling award is given in honor of Dr. Pauling, who received the 1954 Nobel Prize in Chemistry and was a native of the Pacific Northwest. Professor Brauman received his B.S. degree (1959) from the Massachusetts Institute of Technology and his Ph.D. (1963) from the University of California at Berkely. He has also been the recipient of the ACS Award in Pure Chemistry (1973), the Harrison Howe Award (1976), the Stanford University Dean's Award for Distinguished Teaching (1978), the ACS James Flack Norris Award in Physical Organic Chemistry (1986), the ACS Arthur C. Cope Scholar Award (1986), and the National Academy of Sciences Award in Chemical Sciences (2001). He was a Guggenheim Fellow in 1978-79, and he is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and Honorary Fellow of the California Academy of Sciences.

Research projects in the Brauman group include efforts to understand how molecules react and the factors that determine the rates and products of chemical reactions. His research involves the spectroscopy, photochemistry, reaction dynamics, and reaction mechanisms of ions in the gas phase, and utilizes ion cyclotron resonance (ICR) spectroscopy as a primary experimental technique. His group has assembled continuous wave, pulsed, and Fourier-transform instruments coupled with a variety of conventional and laser light sources. Professor Brauman and coworkers hope to increase understanding of the basis of gas-phase ion reaction dynamics by developing statistical and other models for reaction rates. Their research includes the analysis of potential surfaces to define and characterize nucleophilicity in negative ion reactions without solvent. Researchers of the Brauman group are also working to better understand the nature of steric effects and hydrogen bonding and solvent effects. The group utilizes multiple photon infrared absorption to activate reactants or possible intermediates in reactions and observe the products of unimolecular decomposition. The group also uses visible photons to effect detachment of electrons from negative ions, by which they study electron affinities, electronic structure in ions, excited electronic states in ions, and vibrational structure and spin orbit splitting (or triplet-singlet splitting) in the final state neutrals.

The Linus Pauling Award Symposium will be held in Lagerquist Hall at PLU in Tacoma on Saturday, November 9th, 2002, beginning at 1:30 pm. Speaking at the symposium will also be Professor Kristie Boering (UC Berkeley), Professor James Collman (Stanford), and Professor David Goldner (Stanford Research Institute and Stanford University). The Pauling medal will be presented to Professor Brauman at the 7:00 pm banquet in the Scandinavian Cultural Center at PLU. Reservations and payment are required for the banquet only. Cost for the banquet is \$18 per person (\$8 for undergraduate and graduate students). Reservations must be made by October 31, 2002 (with choice of meal preference: chicken, halibut, or vegetarian tortellini). Mail payment (checks payable to PLU) to Pauling Award Banquet, Department of Chemistry, Pacific Lutheran University, Tacoma, WA 98447, or pay on-site at the banquet. Visit [www.chem.plu/pauling\\_award](http://www.chem.plu/pauling_award) for more information, or contact Professor Craig Fryhle at 206-535-7530



## **Professor R. Bruce King to speak at Pacific Lutheran University**

R. Bruce King will speak Thursday September 26th, 2002 at the Leraas Lecture Hall, Rieke Science Center, PLU.

Topic: "Nobel Metal-catalyzed homogeneous and Heterogeneous Processes in Treating Simulated Nuclear Waste Media with Formic Acid"

Simulants for the Hanford Waste Vitrification Plant feed containing the major non-radioactive components Al, Cd, Fe, Mn, Nd, Ni, Zr, Na, CO<sub>3</sub>, NO<sub>3</sub>, and NO<sub>2</sub> were used to study reactions of formic acid at 90 C catalyzed by the nobel metals Ru, Rh, and/or Pd found in significant quantities in uranium fission products. Such reactions were monitored using gas chromatography to analyze the CO<sub>2</sub>, H<sub>2</sub>, NO, and N<sub>2</sub>O in the gas phase and a microammonia electrode to analyze the NH<sub>4</sub><sup>+</sup>/NH<sub>3</sub> in the liquid phase as a function of time. The following reactions have been studied in these systems since they are undesirable side reactions in nuclear waste processing: (1) Decomposition of formic acid to CO<sub>2</sub> + H<sub>2</sub> generates a potential fire and explosion hazard of H<sub>2</sub>. Rhodium, which was introduced as soluble RhCl<sub>3</sub>/3H<sub>2</sub>O was found to be the most active catalyst for H<sub>2</sub> generation from formic acid above 80 C in the presence of nitrite ion. The H<sub>2</sub> production rate has an approximate pseudo first-order dependence on the Rh concentration. (2) Generation of NH<sub>3</sub> from the formic acid reduction of nitrate and/or nitrite is undesirable because of a possible explosion hazard NH<sub>4</sub>NO<sub>3</sub> accumulation in a waste processing plant off-gas system. The Rh-catalyzed reduction of nitrogen-oxygen compounds to ammonia by formic acid was found to exhibit the following features: Nitrate rather than nitrite is the principle source of NH<sub>3</sub>; ammonia production occurs at the expense of hydrogen production; supported rhodium metal catalysts are more active than rhodium in any other form, suggesting that ammonia production involves heterogeneous rather than homogeneous catalysis.

R. Bruce King attended Oberlin College (B.A. 1957) and was an NSF Predoctoral Fellow with Prof. F.G. A. Stone at Harvard University (Ph.D., 1961). After a year at du Pont and 4 1/2 years at the Mellon Institute he joined the faculty of the University of Georgia where has been Regents' Professor of Chemistry since 1973. His research has been in organometallic and organophosphorous chemistry and homogeneous catalysis and the application of topology and graph theory in inorganic chemistry. He is the recipient of the ACS Awards in Pure Chemistry (1971), and Inorganic Chemistry (1991)

## **Science Fair Judges Needed!**

Contact Justine Furutani at 206-729-9428 if you wish to volunteer your time as a science fair judge.



## R. Bruce King

When: Thursday September 26, 2002,  
Where: Pacific Lutheran University. Lerass Lecture  
Hall, Rieke Science Center  
Pizza in lobby of Leraas

Cost: \$5 for food, including drink \$3 for students.

RSVP for food by 5 pm Wednesday September  
25th, to Toni Curtis 253-535-7530



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## Chemistry Olympiad Winners Named

The Chemistry Olympiad was held at Shoreline Community College on April 12th. Two of the students competing (both from Newport High School), **Han Nguyen** (scoring 51 of a possible 60 on the Local Exam), and **Andrew Hemmapladh** (scoring 59 out of a possible 60), advanced to the second stage of the exam. There were three parts to the exam: Laboratory, Standardized Exam, and an Essay answer section. These were administered at Shoreline CC on the following week. Andrew received an Honorary Mention for his performance on the exam. This is a great showing for our Puget Sound Section!!

### Volunteers Wanted!!

At the moment we are searching for volunteers to become coordinators for the 2003 Chemistry Olympiad.

Please consider making a donation of your time for this important event!

Contact Clarita at 206-546-4575 to volunteer.

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## **Biennial Conference on Chemical Education**

The 17th BCCE was held on the WWU campus from July 28th through August 1st and proved to be an extremely successful event. Over 1300 participants attended a program which included 600 individual presentations and posters and 62 workshops. An exhibition hall accommodated 61 trade show booths. There were 94 attendees representing 23 countries outside the U.S. The event was a wonderful opportunity to showcase the Western campus and faculty and the beauty of the Pacific Northwest. This event required an enormous effort on the part of many people. Special thanks go to Jack Weyh (Technical Coordinator), Joe Crook (Exhibits Coordinator), Lorraine Wilde (Chemicals and Supplies Coordinator), Charlie Wandler (Instruments Technician), Debbie Weigand and Kate Popejoy (Hospitality Booth), Amanda Haralson (Fundraising Coordinator), Leigh Ann Giles and Veronica Botts (Registrars), and Sheila Pennel (Administrative Assistant to the General Chair). Thanks also to the many students who volunteered throughout the program. WWU and the BCCE were fortunate to have the skills of Diana Bakkom (Conferences Services Manager).

The heart of a successful conference is its program. Clarita Bhat served as the 2YC3 Program Chair, John Mauch was the High School Program Chair, and Randy Engel and Jim Patterson were the Workshop Co-Coordinators. The person with overall responsibility for the program and who deserves most of the praise is Sara Selfe. My sincere thanks to everyone who worked to make this conference a world-class program of speakers and presentations. Finally, thanks to the Puget Sound Section of the ACS for their generous support.

George S. Kriz, Department of Chemistry, Western Washington University  
General Chair, 17th Annual Biennial Conference on Chemical Education



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## **Fifty Year Members Named**

The following individuals are recognized as 50-year members of the American Chemical Society:

**Dr. Gerald S. Lellouche, Dr. Celia Mae Scott, Mr. Foy McCullough, Jr, Dr. Bruce Campbell, Jr., Dr. Charles D. Anderson, Mr. James C. Mackey, Dr. Robert H. Mazur, and Dr. Eugene D. Schilling.**

If you would like a short bio posted in future editions of the Chemist, or have interesting anecdotes to tell of your career in chemistry, please contact the Editor!

[hohstadt@jps.net](mailto:hohstadt@jps.net) 425-823-9210

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