



The Bulletin
of the
Virginia Section
AMERICAN CHEMICAL SOCIETY

APRIL MEETING NOTICE

University of Virginia
Charlottesville, Virginia

Friday, April 24, 2009

POSTER SESSION: 6:00 - 7:00 p.m.
(STUDENT RESEARCH) Lobby
Chemistry Building

DINNER: 6:00 - 7:00 p.m.
Lobby
Chemistry Building

PROGRAM: 7:00 p.m.
Room 304
Chemistry Building

MENU: Pizza (many varieties), Soft Drinks

DINNER RESERVATIONS: Please make reservations by calling Cindy Knight at (434) 924-7995 or e-mail [csk3a @ virginia.edu](mailto:csk3a@virginia.edu) by **NOON** on Wednesday, April 22.

PRICE: \$8.00 - members, guests, college students; \$4.00 - high school students

HOST: Dr. James Demas - (434) 924-3343, [demas @ virginia.edu](mailto:demas@virginia.edu)

SPEAKER: **Dr. John T. Yates. Jr., University of Virginia**

TOPIC: ***“Observation of Chemical Reactions on Surfaces Using STM—Watching Individual Molecules Do Their Molecular Dances”***

APRIL 2009

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
			<i>reservations</i>		<i>meeting</i>	
26	27	28	29	30		

Dr. John T. Yates, Jr.

John T. Yates, Jr. is Professor of Chemistry and a Shannon Fellow at the University of Virginia. Professor Yates received his B.S. degree from Juniata College and his Ph.D. in physical chemistry from M.I.T. Following three years as Assistant Professor at Antioch College, he joined the National Bureau of Standards, first as a NRC Postdoctoral Research Fellow and then, from 1965 until 1982, as a member of its scientific staff. Professor Yates joined the University of Pittsburgh in 1982 as the first R.K. Mellon Professor of Chemistry and as the Founding Director of the new University of Pittsburgh Surface Science Center. In November 2006, he joined the faculty of the Department of Chemistry at The University of Virginia as a Shannon Fellow.



Professor Yates' research in the fields of surface chemistry and physics, including both the structure and spectroscopy of surface species, the dynamics of surface processes, and the development of new methods for research in surface chemistry, has put him at the forefront of an exciting rapidly growing field of science. At UVA, he continues active research in surface chemistry and photochemistry as well as exploring connections to astrochemistry in the solar system and beyond. He is the author of nearly 700 published and submitted papers. He serves on the editorial boards of six journals and two book series in surface science and catalysis, was Associate Editor of the ACS journal, *Langmuir*, served on the Advisory Board of *Chemical & Engineering News*, and is on the International Advisory Board of *Chemistry World*. He is the co-editor of two books, co-author of "The Surface Scientists Guide to Organometallic Chemistry," and has written the books "Experimental Innovations in Surface Science" and "Molecular Physical Chemistry for Engineers."

Professor Yates has received many honors and awards, including the Stratton Award for Distinguished Research (NBS), the Gold Medal by the U.S. Department of Commerce, the Kendall Award in Colloid or Surface Chemistry (ACS), and the Arthur W. Adamson Award for Distinguished Service in the Advancement of Surface Chemistry (ACS). In 2007, the ACS presented him with the prestigious Peter Debye Award in Physical Chemistry.

He has been active in AVS, APS and ACS affairs for the last 25 years, including being a past member of the AVS Boards of Directors and Trustees, past Chairman of the Surface Science Division of the AVS (for the second time), past chairman, APS Division of Chemical Physics, and the past chairman of the ACS Division of Colloid and Surface Chemistry. He has organized a number of symposia for ACS National Meetings, APS National Meetings, and has been Chairman of three Gordon Research Conferences.

Observation of Chemical Reactions on Surfaces Using STM – Watching Individual Molecules Do Their Molecular Dances

The scanning tunneling microscope provides spatial resolution able to observe the molecular shape and site location of single molecules adsorbed on surfaces. I will show how this technique has been able to observe a free-radical type of chain reaction between self assembled molecules, where as many as 10 molecules are involved in the chain process. Chain reactions have been recognized since the early days (1920's) of gas phase chemical kinetics research. This work is the first to see the individual molecular steps of the chain reaction for adsorbed species.

Reference: P. Maksymovych, D. C. Sorescu, K. D. Jordan and J. T. Yates, Jr., *Science* 322, 1664 (2008), December 12, 2008

DIRECTIONS

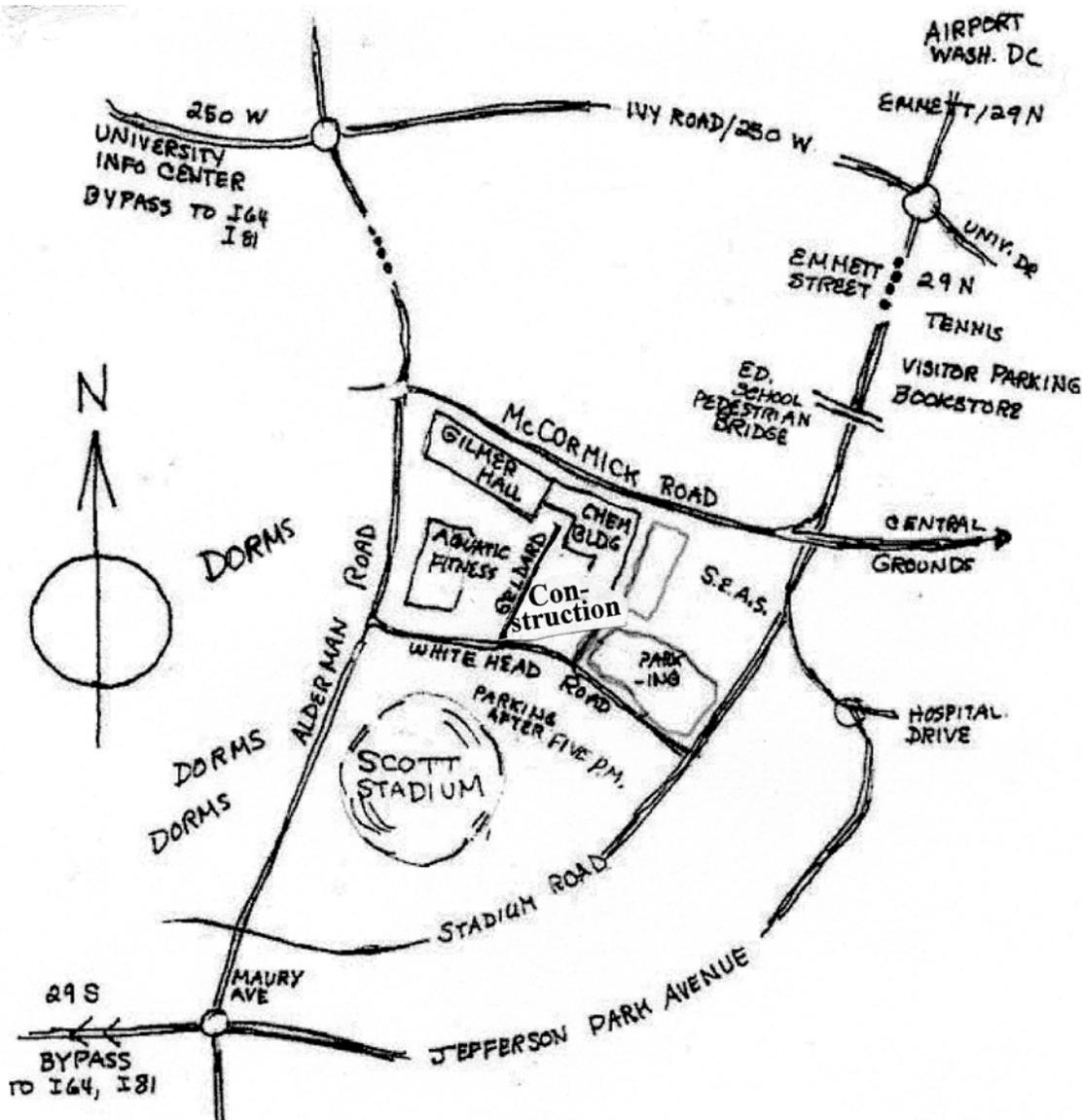
From 29N. Come straight into town past the Cavalier Best Western (on your right), pass under two overhead bridges, and then bear right immediately afterwards. Turn right at the top of the hill at Whitehead Road. Parking is primarily on the left with limited parking on the right (due to construction, there is no longer a chemistry parking lot).

From I-64. Turn north on 29 at Exit 118. Immediately turn right at the Charlottesville/29 Business off ramp. Turn right to go into town, then turn left at the second light. Turn right immediately after the stadium on Whitehead Road. This brings you to the back or new wing of the chemistry building. Parking is on the right and left.

If you miss the first off ramp after I-64, turn right at the next exit (UVA information), proceed into town, turn right at the second light (Alderman Rd.), go through the first light, then make a left at Whitehead Road. Parking is primarily on the right.

Until 5:00 p.m., all parking around the Chemistry Building is restricted and you will be ticketed. Please time your arrival so that you park after 5:00. With the construction, it is most convenient to come around the new Nanotech building on the east side.

MAP



COME EARLY ON APRIL 24 TO SEE THE UNDERGRADUATE RESEARCH POSTERS

*** Virginia section news ***

FUTURE MEETINGS

VIRGINIA SECTION EXECUTIVE COMMITTEE MEETING

Friday, May 15 - 7:00 p.m.
Parham Road Campus

J. Sargeant Reynolds Community College
The Gallery (basement of Georgianous Hall)

VIRGINIA ACADEMY OF SCIENCE MEETING

May 27-29

Virginia Commonwealth University
Richmond, Virginia

VIRGINIA ACADEMY OF SCIENCE MEETING

The 87th Annual Meeting of the Virginia Academy of Science will be held at Virginia Commonwealth University in Richmond on May 27-29, 2009. Chemistry Papers will be scheduled for presentation on May 28. There will be a Poster Session that will run from May 27 through May 28. Persons interested in the Chemistry Section program should contact Dr. Thomas DeVore, Chemistry Department, MSC 4501, James Madison University, Harrisonburg, VA 22807; (540) 568-6672; devoretc @ jmu.edu. More information on the VAS meeting and on Academy membership can be found at <http://www.vacadsci.org/>.

POSTER SESSION

The Virginia Section will hold its annual poster session at the April 24 meeting at the University of Virginia in Charlottesville. The emphasis is on student research, especially work done by undergraduates. This is an excellent informal, low-stress environment for students to make research presentations. If you have a student who wishes to present a poster, please contact Cindy Knight at (434) 924-7995; csk3a @ virginia.edu. More information can be found on this website:

<http://people.virginia.edu/~jnd/ACS2009.htm>. The deadline for registering a poster is April 17. We invite everyone to come early for the UVA meeting and to support these young researchers. Outstanding college and university chemistry majors will also be recognized at this meeting.

EXECUTIVE COMMITTEE MEETING

The second Executive Committee Meeting of the year will be held at J. Sargeant Reynolds Community College, Parham Road Campus, at 7:00 p.m. on Friday, May 15. Heavy hors d'oeuvres will be served at 6:00 p.m. The meeting will be in The Gallery in the basement of Georgianous Hall (coming from I-95, take the second entrance off Parham Road—the drive goes directly to Georgianous Hall and there are signs to direct you to The Gallery). Officers and committee chairpersons should prepare 40 copies of their reports to bring or send to the meeting. Persons interested in joining the Executive Committee or persons who have items for discussion at the meeting should contact Ken Chapman, Virginia Section Chair - (804) 448-4852; kmc97 @ aol.com.

AWARDS TO COLLEGE SENIORS

Outstanding senior chemistry majors from colleges and universities in the Virginia Section will be honored at the April 24 Section meeting in Charlottesville. Each school has been asked to select a student to receive the Virginia Section award for undergraduate achievement. The awardees will be the guests of the Section at the meeting on April 24 and will receive a free membership in the ACS and a certificate of recognition. Chemistry departments must inform Chair Ken Chapman of their nominees and an ACS membership application form must be completed by each nominee. If you have not submitted the name of your outstanding senior chemistry student, please contact Mr. Ken Chapman at (804) 448-4852; kmc97 @ aol.com.

NOMINATIONS FOR AWARDS

The Virginia Section is soliciting nominations for these awards: Distinguished Service Award, Outstanding High School Chemistry Teacher Award, Outstanding Middle School Science Teacher Award, Outstanding Industrial Innovator Award. Names of candidates should be forwarded to Yezdi Pithawalla or Sheryl Baldwin, Chairs of the Awards Committee: Sheryl Baldwin, (804) 353-5805, sdbaldwin @ earthlink.net; Yezdi Pithawalla, (804) 274-4587, yezdi.b.pithawalla @ altria.com.

JUDGES FOR THE VIRGINIA JUNIOR ACADEMY OF SCIENCE

Judges and meeting chairs are needed for the annual meeting of the Virginia Junior Academy of Science (VJAS), to be held at Virginia Commonwealth University in Richmond, May 26-28, 2009. About 750 students from grades seven through twelve will present papers and report on original research work. If you would like to contribute to this celebration of science by young persons, please contact Susan Booth, VAS Director, at susanscience @ msc.com or (757) 874-3349. Judges are needed in Agriculture & Animal Science, Animal Behavior, Botany, Chemistry, Computer Science, Consumer Science, Design Technology, Earth & Space Science, Engineering, Environmental Science, Genetics & Cellular Biology, Mathematics, Medicine & Health, Microbiology, Physical Science, Physics, Psychology, Statistics, and Zoology.

THE CHAIR'S CORNER

Leadership Opportunities

Leadership development for Society service and for ACS members in the work place has long been of concern to the national ACS. One of the latest leadership development offerings has been described by student Katie Hunt, Past-President of ACS, "In 24 years I've taken a lot of leadership courses, and I'll tell you, this is, not just among the best, but the best course I've ever taken."



Earning such an endorsement did not come easily. In the late 1970s, ACS started a long period of frequent leadership training activities for the ACS Washington staff. Some early activities were a waste of time; some were good. Quality of the activities improved over time. ACS leaders decided the most effective activities should be incorporated into the training and information programs designed for new leaders and officers of the Society and long-standing programs were modified. Over the past couple of years, ACS has tested a broader leadership program to offer to the membership.

ACS has now launched the ACS Leadership Development System at the Salt Lake City National Meeting with a Presidential Symposium titled "Leadership: Facing the Challenges of Today and Tomorrow" and five (5) scheduled courses. A brochure is available to describe both on-site and on-line courses available in 2009. Further, ACS offers scholarships for the on-site courses. (Some scholarships should be available through the local section chair; however, I have not yet received information about this program.)

Protect or enhance your career by taking advantage of this new ACS program. For more information, email leaders@acs.org.

Ken Chapman
2009 Virginia Section Chair

Virginia Section Chemists Celebrate Earth Day

April 18, 2009

Volunteers are needed to help with the Virginia Section's annual **Chemists Celebrate Earth Day** program which will be held from 10:00 a.m. until 5:00 p.m. on **Saturday, April 18, 2009** at John Tyler Community College in Chester, Virginia. The theme of this year's celebration is "**Air—The Sky's the Limit.**"

ACS members, club affiliate groups and high school students who would like to volunteer are encouraged to be part of this exciting day!! For more information, please contact Dr. Kristine Smetana at (804) 706-5143 or by email: [ksmetana @ jtcc.edu](mailto:ksmetana@jtcc.edu).



SEMINARS AT VIRGINIA COMMONWEALTH UNIVERSITY

- Apr. 2 - **Dr. Barbara Imperiali**, M.I.T., "Chemical Approaches for the Study of Complex Biological Systems" (**MARY KAPP LECTURE**, 5:00 p.m. in Room 203 of Hibbs Hall)
- Apr. 3 - **CHEMICAL BIOLOGY SYMPOSIUM**, "Small Molecule Regulation of Apoptotic Pathways" (8:30 a.m. - 5:00 p.m., MCV Campus, Medical Sciences Building, Rooms 104, 105, and Auditorium)
- Apr. 9 - **Dr. Richard Crooks**, University of Texas, "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Electrocatalysis"
- Apr. 16 - **Dr. Steve Weber**, University of Pittsburgh, "Single Cell Electroporation—A Window on the Cell?"
- Apr. 23 - **Dr. William Ducker**, Virginia Tech, "Fluid Flow in Confined Films: Lubrication Forces and Nanobubble Generation"

The seminars are held at 3:30 p.m. in the Kapp Lecture Hall, Room 1024, in the Mary E. Kapp wing of Oliver Hall, 1001 West Main Street in Richmond. For more information, call (804) 828-1298.

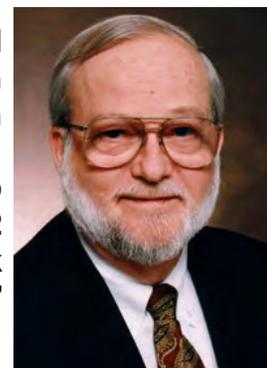
CHEMISTRY SEMINARS AT THE UNIVERSITY OF VIRGINIA

- Apr. 3 - **HECHT SYMPOSIUM**, "Protein Synthesis with Tandemly Activated Transfer RNAs"
- Apr. 10 - **Professor Christopher J. Chang**, University of California, Berkeley, "Chemical Approaches to Understanding Copper and Peroxide Biology in the Brain"
- Apr. 17 - **Professor Tamar Seideman**, Northwestern University
- Apr. 24 - **Professor Sarah Woodson**, Johns Hopkins University, "How RNA Folds, from Ribozymes to Ribosomes"

Seminars are scheduled for 4:00 p.m. in Room 304 of the Chemistry Building. The complete colloquium schedule can be found at <http://www.virginia.edu/chem/newsandevents/seminars/>.

QUESTIONS FROM THE PAST

This question was asked in the March Bulletin: Between 1988, when the Powell Lectureship began at the University of Richmond, and 1992, the Virginia Section sponsored a separate speaker at the U of R meeting. The Powell Lecture was given in the afternoon, followed by dinner, and then a talk by the Virginia Section speaker. The two-speaker arrangement ended in February, 1993 when Dr. Nicholas J. Turro was the only speaker. **Who was the Virginia Section speaker on February 21, 1992 when Dr. Mark Stephen Wrighton spoke at the Powell Lectureship? Dr. Frederick M. Hawkrige** spoke on "Heme Protein Electron Transfer and Ligand Binding Reactions."



A new question from the past: Dr. Hawkrige spoke to the Virginia Section a second time. **When and where was his second presentation and what was his topic then?**

Science Café

Hosted by the Virginia Section
of the American Chemical Society

11:00 A.M. - Saturday, August 1, 2009

What's in our Food, and Where Does It Come From?

Recently several interrelated issues in food and agricultural science have been debated in regional and national contexts: organic farming, the production and consumption of local foods and "food miles", soil conservation, the fate of the family farm, and our national food safety policy. Interest in this topic has been high recently because of the recall of peanut products and the ever-growing interest in organic foods.

Please join us to learn what scientists are doing to protect our food supply and encourage healthy and sustainable eating habits. Our discussion will be accompanied by a delicious complimentary lunch at the Edible Garden.

Discussion Leaders: Brian Moores, Professor of Chemistry Emeritus, Randolph-Macon College, and Bruce Dubee, Soil Scientist, U.S. Department of Agriculture



Edible Garden Restaurant

12506 River Road
Richmond, VA 23238
Telephone 804-784-2011

Edible Garden serves hearty soups, seasonal salads and fresh sandwiches to customers seeking something a little different. The approach has been simple: use the freshest ingredients, provided by local farmers, to create a combination with delectable results. The true essence of the food seeps through with each mouthful.

Please let us know you're coming by **Tuesday, July 28, 2009**. Contact Trey Gregory at TreyGregory03@gmail.com or 804-873-2307.



CHEMISTRY AT THE UNIVERSITY OF VIRGINIA

The University of Virginia Department of Chemistry is of medium size, combining outstanding physical facilities with a close-knit community of scholars. With a faculty size of 25, a graduate student body of about 95, and about 30 research associates, a stimulating atmosphere strongly encouraging interactive association has been created. Faculty research areas span a wide range offering a varied program of courses and research problems. Our 25 faculty members include professors who are nationally and internationally recognized in their fields. The list of recent honors received by faculty members includes the Distinguished Achievement Award in Proteomics from the Human Proteome Organization, the American Chemical Society's Award for Creative Work in Synthetic Organic Chemistry; Dreyfus Teacher-Scholar Awards for excellence in both teaching and research; Virginia Scientist of the Year awards, a Sloan Foundation Award, Alexander von Humboldt Research Prizes, an Analytical Chemistry Award in Chemical Instrumentation, a Presidential Early Career Award for Scientists and Engineers, a Coblentz Award, and a MacArthur Genius Award. Recent graduate student national fellowship awards include the Cognis Corporation Research Fellowship in Colloid and Surface Chemistry, the ACS Division of Medicinal Chemistry Predoctoral Fellowship Award, The Lilly Foundation Graduate Fellowship, The Science Application International Corporation Award and the Achievement Reward for College Scientists.

The goal of graduate study in chemistry is to develop outstanding young scientists able to make significant contributions in their chosen fields. A graduate student can expect to have considerable input in both the design of his or her own degree program as well as in matters pertaining to the operation of the Department as a whole. Emphasis is placed on research that contributes to our fundamental body of knowledge. Also important is the exceptional opportunity to interact not only with fellow graduate students, research associates and faculty, but also with outstanding scientists from all parts of the country and world. This participation in the forefront of scientific discovery prepares the student for the role of independent contributor to the scientific community.

Teaching and research in the Department of Chemistry have been considerably strengthened in recent years by a number of interdisciplinary centers and programs including Molecular Biophysics, Structural Genomics, Chemical Physics, Membrane Bound Proteins, Microfluidics, Biomedical Engineering, Neurosciences and Chemistry of the Universe. These programs, along with ongoing research in analytical methods, synthetic inorganic and organic chemistry, spectroscopy and other areas of physical chemistry, provide the student with a choice of strong research areas over a broad range of the chemical sciences. The faculty attracts more than \$7.5 million yearly in outside funding to support these programs, an indicator of the vigor of research being carried out in the Department.



The graduate program is further supported by an extensive library system. The Barksdale Chemistry Library, established by private gifts provides fundamental references and resources. Most major journals and data bases are available on line. Graduate students are entitled to keys to the building and to the library for research and reading. Alderman Library has more than 1.6 million books as well as extensive collections of manuscripts, maps, prints, and microfilms. The Science and Engineering Library, the large library of the Medical School, and the Physics Library contain numerous additional books and journals in chemistry and allied fields.

ChemEd 2009

ChemEd 2009 will be held at Radford University in Radford, Virginia, August 2-6. This biennial conference is aimed at improving the teaching of chemistry at all levels. There will be presentations ranging from hands-on activities for preschool children through laboratory and classroom activities for AP students in high school and university research on the teaching of chemistry. Registration for the conference will be available March 15 - May 15. Dr. Christine Hermann of Radford University is the Conference Chair (chermann @ radford.edu). For more information, please see the ChemEd 2009 website: <http://www.radford.edu/chemed2009>. To be placed on the conference e-mail list, send an e-mail to chemed2009 @ radford.edu.

DR. SHELTON BANK

Dr. Shelton Bank, Professor Emeritus at the State University of New York at Albany, died on January 12, 2009. He was a graduate of Brooklyn College and earned a Ph.D. at Purdue University. His research interests were varied, ranging from reaction mechanisms to neurotoxins, environmental pollutants, clays, and NMR spectroscopy. He authored or coauthored nearly 100 research papers. Dr. Bank spoke to the Virginia Section on March 10, 1993 in a meeting at the College of William & Mary in Williamsburg. His topic was "Serendipity in Chemistry—Was the World Really Flat Before Columbus?"

BI CHEMICALS OPENS NEW FACILITY

Boehringer Ingelheim Chemicals Inc. Has opened a new manufacturing facility in Petersburg. The Synthesis 5 building is a \$150 million investment and has created 150 new jobs. It produces telmisartan, the active ingredient in the hypertension drug Micardis. The five-story, 96,000-square-foot plant includes production space, laboratories, and support space. BI plans to invest another \$110 million in its extensive Petersburg complex. The company is based in Ingelheim, Germany and has affiliates in 47 countries with a total of about 39,800 employees.



VIRGINIA SECTION SPEAKERS RECEIVE ACS AWARDS

Three persons who have made presentations at Virginia Section meetings will receive national awards from the American Chemical Society:

Sister Mary Virginia Orna is to receive the 2009 ACS Award for Volunteer Service to the American Chemical Society. She spoke to the Virginia Section on November 17, 1995 at Mary Washington College in Fredericksburg. Her topic was "The Chemist as Detective in Examining Art and Artifacts."

Dr. Roald Hoffmann has been named as the recipient of the James T. Grady-James H. Stack Award for Interpreting Chemistry for the Public. He addressed the Virginia Section at the University of Richmond's Powell Lectureship on February 8, 2008, speaking on Antoine and Marie Anne Lavoisier.

Dr. Glenn Crosby and his wife Jane L. Crosby have received the Charles Lathrop Parsons Award, the Society's most prestigious service award. Dr. Crosby spoke at the University of Richmond on March 19, 1988 on "All Things Great and Small: Avogadro's Number and the Concept of the Mole."

CAN YOU IDENTIFY THESE PERSONS?



The photograph is from 2004 when the persons shown were the speakers at the December 3 meeting of the Virginia Section. At the time they were both members of the Chemistry Department faculty at Randolph-Macon College. Since then, one of them has retired (but still teaches part-time). Their “Evening of Chemical Diversions” entertained and enlightened the audience with “a miscellany of startling and amazing chemical phenomena!” Over 100 persons filled the auditorium at the Copley Science Center for the program.

The “mystery persons” in the March issue were Dr. Kristine Smetana (John Tyler Community College), Dr. Lidia Vallarino (Virginia Commonwealth University), and Dr. Raymond Dominey (University of Richmond).



EXECUTIVE OFFICER FOR THE VIRGINIA ACADEMY OF SCIENCE

The Virginia Academy of Science is searching for a new Executive Officer. Dr. Jerry Bass is retiring after many years of service to the Academy. The Executive Officer is the chief spokesman for the Academy. He or she assists the President, the Executive Committee, Section officers, and Academy committees with their work. The Academy is also looking for a new Administrative Assistant and an Editor for the publication *Virginia Scientists*. Information on the Academy and the positions available can be found on their website: <http://www.vaacadsci.org> or call (804) 864-1451.

THANKS FROM THE SCIENCE MUSEUM OF VIRGINIA

The Virginia Section gave \$5,000 to the Science Museum of Virginia to support their chemistry exhibits and demonstrations. In his thank you letter, Mr. Richard C. Conti, Director/CEO of the Museum, said “The funds will be used for equipment, supplies, graphics and staffing for our diffusion cloud chamber and Radical Reactions demonstration. Please pass on our thanks to all the society members. We will really put this to great use! Thanks so very much!”

CHEMICAL BREAKTHROUGH AWARDS

The Division of the History of Chemistry (HIST) presents Citation for Chemical Breakthrough awards. This awards program was founded by **Jeffrey I. Seeman**, past HIST chair. The awards recognize publications, books, and patents in the chemical sciences whose advances are revolutionary in concept, broad in scope, and long-term in impact. The photograph shows Dr. Seeman presenting a Breakthrough award to Dr. John D. Roberts.



left-to-right: Dr. Timothy Swager, Dr. John Roberts, Dr. Jeffrey Seeman, Dr. Frederick Greene

Editor’s Note: Dr. Swager is Chair of the Chemistry Department at MIT and was the speaker at the Powell Lectureship at the University of Richmond on Feb. 6, 2009; Dr. Seeman has addressed the Virginia Section four times and received the Distinguished Service Award in 2007.

THE BULLETIN

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Science Museum of Virginia

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<http://membership.acs.org/V/VA/>

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Ken Chapman

