



The Bulletin
of the
Virginia Section
AMERICAN CHEMICAL SOCIETY

FEBRUARY MEETING NOTICE

**University of Richmond
Richmond, Virginia**

Friday, February 6, 2009

**POWELL
RECEPTION:** **6:00 p.m.**
Richmond Room
Heilman Dining Center

DINNER: **6:30 p.m.**
Richmond Room
Heilman Dining Center

PROGRAM: **7:30 p.m.**
Auditorium
Gottwald Center for the Sciences

MENU: Cranberry Orange Pecan Salad, Herb Stuffed Chicken Breast, Smashed Red Potatoes, Italian Green Beans, Rolls, Chocolate Mousse, New York Style Cheesecake, Coffee and Tea. Vegetarian Alternative - Eggplant Roulettes (please specify Vegetarian when making your reservation)

PRICE: \$12.00 (no reductions)

**DINNER
RESERVATIONS:** Please make reservations for the Dinner by **NOON on Friday, January 30** by calling the Chemistry Department at the University of Richmond, **(804) 289-8242** or by e-mail to **amallory @ richmond.edu**.
NOTE: Space is limited for the dinner—make your reservation early!

HOST: Dr. Lisa Gentile, (804) 484-1578; lgentile @ richmond.edu

SPEAKER: **Dr. Timothy Swager, M.I.T.**

TOPIC: **“Polymer Electronics for Chemical and Biological Sensors”**

FEBRUARY 2009

S	M	T	W	T	F	S
25	26	27	28	29	30	31
					<i>reservations</i>	
1	2	3	4	5	6	7
					<i>meeting</i>	
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

The W. Allan Powell Lectureship

Dr. Timothy Swager

Timothy M. Swager is the John D. MacArthur Professor of Chemistry and the Head of the Department of Chemistry at the Massachusetts Institute of Technology. A native of Montana, he received a BS from Montana State University and a Ph.D. from the California Institute of Technology. After a postdoctoral appointment at MIT in the laboratory of Mark S. Wrighton, he was on the chemistry faculty at the University of Pennsylvania from 1990-1996. He moved to MIT in July of 1996 as a Professor of Chemistry. He has published about 250 peer-reviewed papers, 70 proceedings, and 5 book chapters and serves on multiple editorial boards. His research interests are in design, synthesis, and study of organic-based electronic, sensory, and liquid crystalline materials.



In the field of liquid crystals he developed new designs based upon shape complementarity to generate specific interactions between molecules and has recently developed fundamental mechanisms for increasing the order in liquid crystals by a new mechanism referred to as minimization of free volume. Swager's research in electronic polymers has been directed at the demonstration of new conceptual approaches to the construction of sensory materials. In particular, he has developed conjugated polymer sensory transduction schemes that translate molecular recognition events into readily measured signals. The fundamental tenet of this research is that the cooperative nature of these materials produces enhancements in observable signals relative to monomeric analogs. Swager has shown this amplification to be general and applicable to any signal, which is dependent upon the transport properties of the system. Materials and methods from the Swager laboratory are the enabling technology for the explosive detectors that have become the flagship products of ICx Technologies Inc. These sensors have demonstrated unprecedented sensitivities for the detection of the explosive TNT. Related technologies are under commercial development for the detection of chemical weapons, toxic industrial chemicals, and biological molecules. Other areas impacted by Swager's molecular and polymer designs include ultra-stable low dielectric constant materials for use as interlayer dielectrics, polymer actuators, and novel molecular probes for medical diagnostics.

Dr. Swager has received a number of awards and honors including: Election to the National Academy of Science 2008, Fellow of the American Academy of Arts and Sciences 2006, Christopher Columbus Foundation Homeland Security Award 2005, The Carl S. Marvel Creative Polymer Chemistry Award (ACS-Polymer Div) 2005, Clare Hall Visiting Fellow (U. Cambridge, England) 2005, Vladimir Karapetoff Award (MIT) 2000, Cope Scholar Award (ACS) 2000, Union Carbide Innovation Recognition Award 1997-8, Philadelphia Section Award (ACS) 1996, Camille Dreyfus Teacher-Scholar 1995-1997.

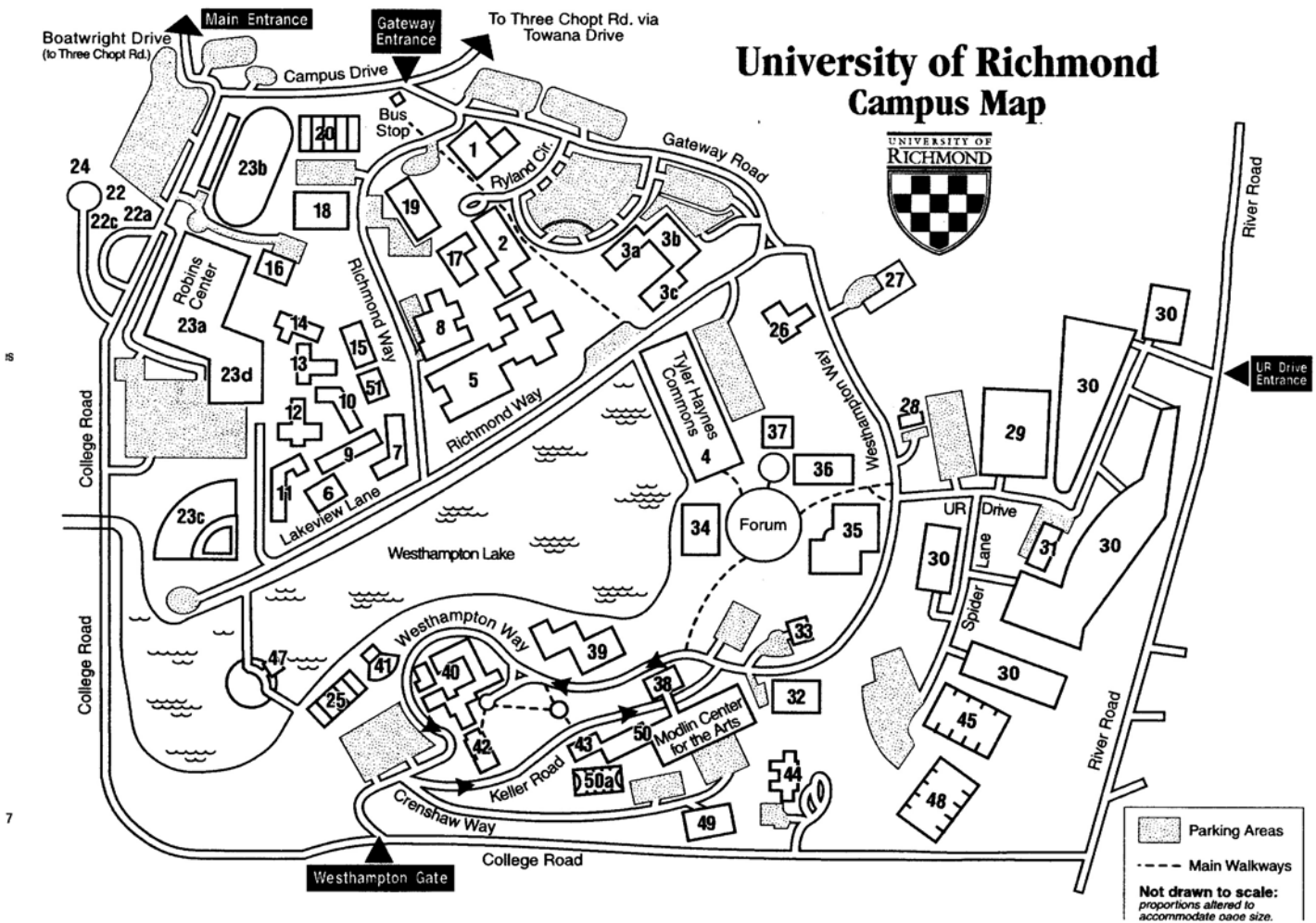
“Polymer Electronics for Chemical and Biological Sensors”

This lecture will describe the conceptual design and optimization of chemical/biological sensors based upon conjugated polymers (CPs) and carbon nanotubes (CNTs). The ability of a CP to produce amplification in a fluorescence- or resistance-based chemosensor stems from its ability to transport optical excitations or electrical charge, respectively, over large distances. These transport properties provide the increased sensitivity and versatility of CPs and CNTs over small-molecule chemosensors. By adding new functional diversity to CPs and CNTs chemoresistive properties have been realized. In fluorescence sensors, the migration of an optical excitation increases the probability of an encounter with an occupied binding site. We originally demonstrated this scheme making use of analyte induced quenching and have also demonstrated how local reductions in the polymers bandgap produce wavelength shifts in emission. To impart recognition to our polymers we have made use of a variety of molecular recognition schemes, assemblies, and reactions. Recent applications of amplifying polymers in biosensory schemes will be discussed. A number of different methods can be used to impart analyte selectivity to electronic polymer sensors. These involve designed receptors, modifications to the energy levels of the polymers, and coupling to other key reactions. The latest results in these directions will be described.

DIRECTIONS

From I-64, take the Glenside Drive South exit (Exit 183A) and go about 1.5 miles to the 4th traffic light. Turn left on to Three Chopt Road and go about 0.8 mile. Follow the signs to the University of Richmond, turning right on to Boatwright Drive, then left on to Campus Drive. Turn right through the main gate on to Gateway Road. Continue on Gateway Road to the traffic island. Turn left on to Westhampton Way. Continue on Westhampton Way to the top of the hill. Parking is available in the three lots at the top of the hill. The Powell Reception and Dinner will be in the Richmond Room (downstairs) of the Heilman Dining Center (# 34 on the map below) which is across from the Gottwald Science Center (# 35). Note—there is no parking available in front of the Science Center. See the map below.

U OF R CAMPUS MAP



HEILMAN DINING CENTER

GOTTWALD SCIENCE CENTER

P = PARKING

***** VIRGINIA SECTION NEWS *******FUTURE MEETINGS**

DATE: March 27, 2009
LOCATION: Lynchburg College
Lynchburg, Virginia
HOST: Dr. William Lokar
PHONE: (434) 544-8631
E-MAIL: lokar_w @ lynchburg.edu
SPEAKER: Government or ACS Official
TOPIC: "Science Policy Today for a
Better Tomorrow "

DATE: April 24, 2009
LOCATION: University of Virginia
Charlottesville, Virginia
HOST: Dr. James Demas
PHONE: (434) 924-3343
E-MAIL: demas @ virginia.edu
SPEAKER: Dr. John Yates
TOPIC: "Reactions of Single Molecules
on Surfaces"

 **Joint Meeting with Blue Ridge Section**

 **STUDENT POSTER SESSION**

**VIRGINIA ACADEMY OF SCIENCE
ANNUAL MEETING**

**Virginia Commonwealth University
May 27-29, 2009**

CALL FOR PAPERS

The 87th Annual meeting of the Academy will be held at Virginia Commonwealth University in Richmond on May 27-29. Titles for papers should be sent to the Secretary of the Chemistry Section by Friday, February 13, 2009. Papers will be scheduled for presentation on May 28. There will be a Poster Session that will run from May 27 through May 28. To submit a paper, send the title and author(s) to Dr. Thomas C. DeVore, Department of Chemistry and Biochemistry, MSC4501, James Madison University, Harrisonburg, VA 22807; (540) 568-6672; devoretc @ jmu.edu. Note that the presenting author must be registered for the VAS meeting and at least one author must be a member of the Academy. Paper abstracts will be due at the Annual Meeting. Full information about paper submission and about Academy membership can be found on the Academy's website: www.vacadsci.org.

THE CHAIR'S CORNER

A Reason for ACS Membership

Dr. Tom Lane, ACS President for 2009, and I spent an early December weekend at a "Summit on Chemical Technicians in ACS." At one point, Tom mentioned his amazement at the reception he encountered during his recent first meeting with Congressional staff. As a representative from ACS, he was accepted as a valuable resource and a source of balanced perspectives on scientific policy issues.



ACS has an outstanding reputation among Congressional personnel. That reputation has been earned over many years, as Congress discovered repeatedly that ACS representatives always were well-armed with a broad understanding of issues, balanced information, and an ability to help solve problems without resorting to pork-barrel projects. The ACS operational structure that leads to such results is complex and slow. It seeks input from as many members as possible and from other sources. All committees appropriate to the topics provide debate and analysis from the many different viewpoints of their members that originated in industrial laboratories, academic classrooms, research management meetings, and other places where chemists practice their profession.

Each ACS member contributes to the above reputation of the Society. Making viewpoints known through service on ACS committees at any level – or through discussions with committee members – is very important to forming ACS positions on science policy. Many chemists consider ACS membership a "professional obligation." However, ACS membership may be critical in improving the national environment within which the profession is practiced. Encourage your colleagues and students to become (active) members.

Ken Chapman
2009 Virginia Section Chair

STUDENT AFFILIATE CHAPTERS RECOGNIZED

Two student affiliates chapters in the Virginia Section have been recognized for their achievements during the 2007-2008 academic year. The chapter at the University of Mary Washington was cited as "commendable" and the James Madison University chapter received "honorable mention." The student leaders at the University of Mary Washington were Jennifer Yox and Revecca Funkhauser. Dr. Leanna Giancarlo was the faculty advisor for the chapter. At James Madison University, the student leaders were Allyson Jones, Matthew Ross, and Rosa Rivera-Hainaj. Dr. Kathryn Layman was the faculty advisor at JMU. The selections were made by the ACS Society Committee on Education (SOCED). The full list of chapters that will be honored at the spring 2009 ACS national meeting in Salt Lake City can be found in the November/December 2008 issue of *inChemistry* or online at www.acs.org/saprogram.

VIRGINIA SECTION WEBSITE

For full information on Section activities, including meetings, don't forget to check out the Virginia Section website, located at: <http://membership.acs.org/VVA/>. Thanks to Ann Sullivan for maintaining the site. Anne can be contacted at [asullivan @ reynolds.edu](mailto:asullivan@reynolds.edu).

VIRGINIA SECTION NCW PROGRAM CITED IN C&EN

"Having a Ball with National Chemistry Week" was the title of an extensive article published in the December 15, 2008 issue of *Chemical & Engineering News*. The article highlighted some of the innovative ways that local sections celebrated National Chemistry Week. The Virginia Section was cited in this descriptive paragraph:

"The **Virginia Section** partnered with area chemistry clubs to host a Chemistry Olympics event for some 600 children at the Science Museum of Virginia, in Richmond. Participants learned about solar-powered cars and polymeric materials used in swimsuits."

Dr. Kristine Smetana organized the National Chemistry Week activities for the Virginia Section. Check the December, 2008 Bulletin for a description of some of the 2008 NCW activities along with some photographs. The names of NCW volunteers were printed in the January, 2009 Bulletin. Both issues are included in the dozens of back issues of the Virginia Section Bulletin that are archived on the Section's website: <http://membership.acs.org/VVA/>. The NCW article from *Chemical & Engineering News* can be obtained on line at www.CEN-ONLINE.org.

DEATH OF ACS MEMBERS

Two long-time members of the Virginia Section have died. Dr. Everette Lee May of Richmond passed away on August 9, 2008. Dr. May was 94. He had been a Professor in the Department of Pharmacology and Toxicology at Virginia Commonwealth University.

Mr. Ludwig "Lou" Weissbecker of Richmond died on December 3, 2008, at the age of 78. He worked for over 30 years as a research scientist at Philip Morris.

CHEMISTRY GRADUATES AT SECTION SCHOOLS

The ACS Committee on Professional Training (CPT) has issued its annual report on chemistry degrees awarded at colleges and universities having departments approved by the American Chemical Society. The data for 2006-07 place two schools from the Virginia Section among the top producers of bachelor's graduates. The University of Virginia ranked seventh in the U.S. in total bachelor's graduates with a total of 108 (the University of Washington led the nation in this category with 253 graduates). The University of Virginia was ranked second in certified bachelor's graduates with a total of 97 (The University of Texas at Austin had 157 certified graduates). The College of William and Mary ranked 13th in certified bachelor's graduates with 37.

The number of bachelor's degrees conferred at colleges and universities having approved programs rose to 12,888, an all-time record number and an increase of 6.3% over the number for 2005-06. Here are the number of bachelor's graduates from schools in the Virginia Section:

COLLEGE OR UNIVERSITY	TOTAL BACHELOR'S GRADUATES	CERTIFIED BACHELOR'S GRADUATES
College of William & Mary	45	37
Hampden-Sydney College	4	2
James Madison University	37	11
Randolph-Macon College	8	3
University of Richmond	15	12
University of Virginia	108	97
Virginia Commonwealth University	49	3

In Chemistry, The College of William & Mary had three M.S. graduates. The University of Virginia had 14 M.S. and 26 Ph.D. graduates. Virginia Commonwealth University had one M.S. and nine Ph.D. graduates. In Chemical Engineering, the University of Virginia had 34 B.S., ten M.S., and four Ph.D. graduates while Virginia Commonwealth University had ten B.S. and two M.S. graduates.

2009 CHEMISTRY OLYMPIAD

The Virginia Section will host the 2009 Chemistry Olympiad for all high school chemistry teachers and students who are interested in participating. The Local Section competition will begin on March 2 and end on March 28, 2009. High school teachers can make arrangements within their schools to provide secure testing sites and administer the Olympiad exams. **The deadline to register students is February 24.** For more information and the application forms, either hard copy or on-line, go to the Virginia Section Chemistry Olympiad site at <http://membership.acs.org/VVA/olympiad/default.htm>.

The students who do well in the local competition will be nominated to compete in the National competition, to be held at J. Sargeant Reynolds Community College, Downtown Campus, in Richmond, Virginia on April 25. These students will compete for 20 positions in the study camp to be held at the US Air Force Academy in Colorado Springs, Colorado on June 7-21, 2009. The five member International Chemistry Olympiad (IChO) team will be chosen from these 20 students to compete in the IChO. This year the 41st International Chemistry Olympiad competition will be held in Cambridge, England on July 18-27, 2009.

Local Section competition is organized into categories by size of the school. Each student who participates will receive a certificate. Highest scoring student from each school will receive Chemistry Olympiad pins and gift certificates. Team awards will be presented to schools for group achievement.

For complete information and registration materials, visit the Virginia Section website or contact the Olympiad Coordinator: Dr. Ann M. Sullivan, Mathematics and Science, Downtown Campus, J. Sargeant Reynolds Community College, P. O. Box 85622, Richmond, VA 23285-5622; (804) 862-4260, (804) 943-2941, or (804) 523-5777; FAX: (804) 732-6077; e-mail: asullivan@reynolds.edu.

CHEMISTRY AT THE UNIVERSITY OF RICHMOND

The Chemistry Department at the University of Richmond is located in the Gottwald Center for the Sciences along with the Departments of Biology and Physics. Offering both the B.S. and B.A. degrees in Chemistry and Biochemistry/Molecular Biology, the department provides excellent preparation for work or professional studies in chemistry, biochemistry, the health sciences, and chemical engineering, as well as for teaching or for legal careers. The department meets certification requirements by the American Chemical Society for the B.S. in Chemistry and in Chemistry/Biochemistry.

Our students receive a strong background in chemistry in an atmosphere of activity and support from an able and enthusiastic faculty. Class sizes are never greater than 40 and upper level classes and teaching laboratory sections generally have less than 20. Students enjoy the use of a wide variety of modern instrumentation both in their teaching laboratories and in research experiences. Many of our students present the results of their research work to the scientific community both by presentation at meetings on and off campus and in publications. They have the opportunity to grow and learn in an exciting and supportive setting, and when their undergraduate days are over, they find that they are well prepared to pursue their dreams.

The chemistry major at the University of Richmond provides a strong basic background in the major sub-disciplines of chemistry (analytical, inorganic, organic, physical and biochemistry). Richmond graduates are ready to enter the best chemistry graduate programs in the country, to enter the work force as chemists in industry and government, to proceed into careers as secondary school teachers, or to develop careers in sales and marketing for technical industry. The major also provides an excellent background for studies in medicine, the allied health professions, and law. The number of students graduating with a major in chemistry has been between 12 and 20 for the past few years. The majority of our students participate in research sometime during their program. About half of recent graduating chemistry majors entered graduate programs in chemistry or related fields.

A \$35 million renovation and expansion of Gottwald Center for the Sciences was completed in 2005. New space (approximately 28,000 sq. ft.) was added to the south and west sides of the building to provide faculty offices and research labs, and the original space (162,000 sq. ft.) was renovated to include the addition of cutting-edge technology and space for scientific equipment. Our facility includes a new atrium, new and renovated research laboratories, and an entrance more closely aligned with the Collegiate Gothic architecture of other campus buildings. Flexibility to add future teaching and research technologies was designed into the project. Upgrading Gottwald was part of the University's \$50 million plan to improve science facilities and programs over this decade and to place Richmond among the first-choice colleges of America's top high school science students. Over this decade, the University has added up to 18 new faculty positions and placed greater emphasis on interdisciplinary studies and innovative science classes for non-majors.



QUESTIONS FROM THE PAST

This question was asked in the January Bulletin: The Virginia Section has been presenting awards to distinguished high school chemistry teachers for sixty years. **Who was the recipient of the first teaching award, presented in 1948?** Bonus question: When did the Section begin recognizing middle school science teachers? The Virginia Section established an Awards Committee in 1947. The Committee included Rodney C. Berry, J. H. Brant, James W. Cole, Robert H. Kean, and John H. Yoe. The awards were initiated by an offer of an annual monetary gift from Mrs. Henry K. McConnell of Richmond, in memory of her late husband, Henry K. McConnell who had been Vice-President of the Tobacco By-Products and Chemical Corporation and who served as Chairman of the Virginia Section in 1925. The first awards were presented in June, 1948. Dr. Wortley F. Rudd, Dean Emeritus of the School of Pharmacy at the Medical College of Virginia, received the first Distinguished Service Award. The first award for high school chemistry teaching was presented to **Mr. Lawrence W. Jarman**, Head of the Science Department at Thomas Jefferson High School in Richmond. The Section began its practice of recognizing middle school science teachers in **1990** when **Ms. Jeannie Bishop** of Liberty Middle School in Hanover County received the first award in that category.

A new question: The University of Richmond has hosted the W. Allan Powell Lectureship in Chemistry every year since 1988. Dr. Timothy Swager is the 22nd distinguished scientist to be invited to speak as part of the Lectureship program. **How many of those persons have been awarded Nobel prizes?** Bonus points if you can name the Nobel winners.

SEMINARS AT VIRGINIA COMMONWEALTH UNIVERSITY

Jan. 29 - **Diane Bunce**, Catholic University of America

Apr. 2 - **MARY KAPP LECTURE**

Apr. 3 - **CHEMICAL BIOLOGY SYMPOSIUM**

Apr. 9 - **Dr. Richard Crooks**, University of Texas

Apr. 16 - **Dr. Steve Weber**, University of Pittsburgh

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. The public is invited. For more information, call (804) 828-1298.



SEMINARS AT THE UNIVERSITY OF VIRGINIA

Jan. 16 - **Professor Joan Steitz**, Yale University, "Tiny RNPs: Versatile Regulators of Gene Expression in Vertebrate Cells"

Feb. 6 - **Professor Horia Metiu**, University of California - Santa Barbara, "Catalysis by Atomic-Sized Centers"

Feb. 20 - **Professor Linda Hsieh-Wilson**, California Institute of Technology (**JEFFERSON LECTURE IN CHEMISTRY**)

- Feb. 27 - **Professor Scott Miller**, Yale University, "Biomimetic Asymmetric Catalysis: 'Simple' Catalysts and Complex Reactions"
- Mar. 6 - **Professor Klaus Hahn**, University of North Carolina at Chapel Hill, "Watching and Poking at Signaling Proteins in Living Cells - Multiplex Biosensor Imaging and Genetically Encoded Protein Caging"
- Mar. 13 - **Professor Peter Caravan**, Martinos Center for Biomedical Imaging, Massachusetts General Hospital, "Peptide-Gadolinium Conjugates for Noninvasive MRI Detection of Cardiovascular Disease"
- Mar. 20 - **Professor Michael F. Summers**, Howard Hughes Medical Institute, University of Maryland Baltimore County, "New Insights into the Mechanism of HIV-1 Genome Packaging and Virus Assembly"
- Mar. 27 - **Professor Keith Moffat**, University of Chicago, "How Do Molecules Respond to Light? Static and Time-Resolved Crystallography of Photoreceptors"
- 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/>.

COMMITTEE MEMBERS NEEDED!

Help out the Virginia Section by serving on one of our committees: Awards, Chemical Education, Chemical Technicians, Chemistry Olympiad, Entertainment, Government Relations, Hospitality, Industrial Relations, Media/Public Relations, Membership, Minority Affairs, National Chemistry Week/Chemists Celebrate Earth Week, Publications, Safety, SERMACS-2011, Student Affiliates, and Younger Chemists (YCC). To get more information, volunteer your services, or make suggestions, contact Mr. Ken Chapman, Section Chair at (804) 448-4852 or by e-mail to [kmc97 @ aol.com](mailto:kmc97@aol.com). Suggestions for new committees or committee activities are welcome. Have an idea for a future meeting, a speaker, a topic, or a location? Contact Yezdi Pithawalla who is planning the programs for 2009: (804) 274-4587; [yezdi.b.pithawalla @ altria.com](mailto:yezdi.b.pithawalla@altria.com).

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WORDS OF WISDOM FOR FEBRUARY: **"NEVER**
CONFUSE ACTIVITY WITH ACCOMPLISHMENT"

CAN YOU IDENTIFY THIS PERSON?



The recent photograph shows the person who spoke to the Virginia Section at Mary Washington College in Fredericksburg on November 17, 1995. Her topic was "The Chemist as Detective in Examining Art and Artifacts." She is a Sister in the O.S.U. (Order of Saint Ursula) and Professor of Chemistry at the College of New Rochelle. She is also Editor-at-Large of *Chemical Heritage* magazine, former Director of Educational Services at the Chemical Heritage Foundation, and is Publications Coordinator of the *Journal of Chemical Education*. She received her Ph.D. in analytical chemistry from Fordham University and has lectured widely in the areas of color chemistry and archaeological chemistry. She has been very active in the ACS at the local, regional, and national levels. She was the recipient of the 2008 Henry Hill Award, presented by the ACS Division of Professional Relations. In 2009, she will receive the Award for Volunteer Service to ACS.

The "mystery person" in the January issue was **Frank Kizer**. Frank is one of only two persons to receive the Outstanding High School Chemistry Teacher Award and the Distinguished Service Award from the Virginia Section. He and his wife Helen live in Lancaster County.



NEW MEMBERS OF THE VIRGINIA SECTION

Space limitations in 2008 prevented us from printing the names of new members. We welcome these members who joined the Virginia Section last year:

JAMES E ASHLEY
 CYNTHIA BARBER
 THOMAS H BRUMFIELD
 WILLIAM CASE
 WILLIAM L CRUM
 KELLING DONALD
 MEGAN A FIKSE
 JIANZHONG FU
 SHELLEY R GRAHAM
 HELENE L HACZYNSKI
 SARAH M HUFFER
 JAMES T JARVIS
 MICHAEL LAIRD KING
 TRACEY P LEE
 IAN MACPHERSON
 GEORGE MILNE
 YAW OBENG BOAMPONG
 RANDOLPH B PERFETTI
 DANIEL JONATHAN QUIRAM
 TRESY ROSS
 BRIAN R SLAWSKI

DAVID SLOAN AYERS
 PAMELA SCHULTZ BIRAK
 TARA BRUNYANSKY
 HELEN CHUI
 RENEE M DALRYMPLE
 KRISTEN R DONNELLY
 BARBARA OPPEN FRANCIS
 RICHARD G W GINGERICH
 CHRISTOPHER GREEN
 ANWAR HAMAMA
 MEGAN L HUFFMAN
 GARY L JUSKOWIAK
 ASAKO KUBOTA
 WEILING LI
 JENNIFER M MCKAY
 DONNA MONTAGUE
 VAHUR OJA
 NOVELLE C PRIDE
 DAVID L REICHERT
 TED V SHANER
 FRANCINE ST DENIS

ZHIYI BAO
 RADOSLAV BOZOV
 SEDA CAKIR
 DAVID J COOPER
 ASHLEY DEMANDER
 ANN M ENGLISH
 CASSANDRA FRASER
 MONICA L GLASS
 SAPNA GUPTA
 CHRIS W HOLMAN
 STEPHEN L HUSSEY
 ELIZABETH H KEYMONT
 GEORGE M LAIDLAW
 RUSSELL CRAIG LOTT
 JOSEPH MCMINN
 MINH A NGUYEN
 STEVEN W PAUGH
 ALBERTO PROTZEL
 ROXANNE E RODES
 CHRISTOPHER SHUFORD
 STERLING M STOKES

THE BULLETIN

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Ken Chapman

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