



*The Bulletin*  
of the  
Virginia Section  
AMERICAN CHEMICAL SOCIETY

**OCTOBER MEETING NOTICE**

**College of William and Mary  
Williamsburg, Virginia**

**Tuesday, October 24, 2006**

*Joint Meeting with the Hampton Roads Section*

**DINNER:** 6:15 p.m.  
Little Theater  
Campus Center

**RECEPTION:** 7:30 p.m.  
Rogers Hall

**PROGRAM:** 8:00 p.m.  
Room 100  
Rogers Hall

**MENU:** Romaine Salad with Raspberry Walnut Dressing, Asparagus and Roasted Red Pepper Salad with Red Onion and Caper Vinaigrette, Garlic and Leek Mashed Potatoes, Roast Pork Loin with Gingered Apricots and Sauteed Apples, Herb Roasted Chicken Breast with Artichokes and Mushrooms, Cornbread with Whipped Butter, Apple Crisp, Tea and Coffee

**PRICE:** Members /Guests - \$19.00; Students, High School Teachers, Retired ACS Members/Spouses, Retired Teachers/Spouses - \$10.00

**DINNER RESERVATIONS:** Please make reservations for the dinner by **NOON on Thursday, October 19** by calling Will Lewis at (804) 274-5869 or e-mail to will.h.lewis @ pmusa.com (NOTE THE EARLY DEADLINE FOR RESERVATIONS)

**HOST:** Dr. Gary W. Rice - (757) 221-2540; gwrice @ wm.edu

**SPEAKER:** **Dr. E. Ann Nalley, President, American Chemical Society**

**TOPIC:** **“Chemistry—Transforming Lives”**

**OCTOBER 2006**

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	26	27	28
			meeting			
29	30	31				

## Dr. E. Ann Nalley



Dr. Ann Nalley, President of the American Chemical Society, is currently a Professor of Chemistry in the Physical Science Department at Cameron University in Lawton, Oklahoma, a position that she has held since 1969. Before coming to Cameron she taught high school chemistry and mathematics at Muskogee High School. She has held positions as a visiting scientist or professor in the Chemistry Departments at the University of Oklahoma and the University of Texas at Dallas, and in the Polymer Science Department at the University of Southern Mississippi. She earned a B.S. Degree at Northeastern Oklahoma State University, a Master's Degree in Analytical Chemistry at Oklahoma State University, and a Ph.D. in Radiation Chemistry from Texas Woman's University. Her research includes new product development and solving industrial problems in the area of cosmetic analysis, nanostructural materials, applied research in the petroleum industry and molecular modeling. Her research is currently funded through the Oklahoma OCAST (Oklahoma Center for the Advancement of Science and Technology) program. Her activities in the ACS as well as the Honor Society of Phi Kappa Phi have earned her recognition at the national level. She has held every office in the local section of the ACS and has served on nine national committees or task forces. In 1992, she was honored by the five Oklahoma sections of the ACS as the Oklahoma Chemist of the Year. She was the first and only woman to be so honored. In March 1996, she was honored at the ACS National meeting in New Orleans when she was presented with the Division of Professional Relation's Henry Hill Award for Outstanding Contributions to Professionalism. She has served as a Councilor for more than 25 years. In 2005 she was elected to position of President-Elect, is now serving as President, and will be the Immediate Past President in 2007. She had previously served for seven years on the Board of Directors of the ACS as Director of District V. She served four years on the National Board of the American Institute of Chemists as a Director-At-Large. She also served on the Board of Directors of the Phi Kappa Phi Honor Society for 21 years, completing her last term as the immediate past National President in 2001. She served in the positions of Regent (1980-89) and National Vice President (1989-92), President-Elect (1992-95) and National President (1995-98). She has chaired or served on numerous local and National Phi Kappa Phi Committees. In her spare time, she finds time to maintain a pet refuge for over 40 displaced or deserted animals.

### **“Improving People’s Lives Through the Transforming Power of Chemistry”**

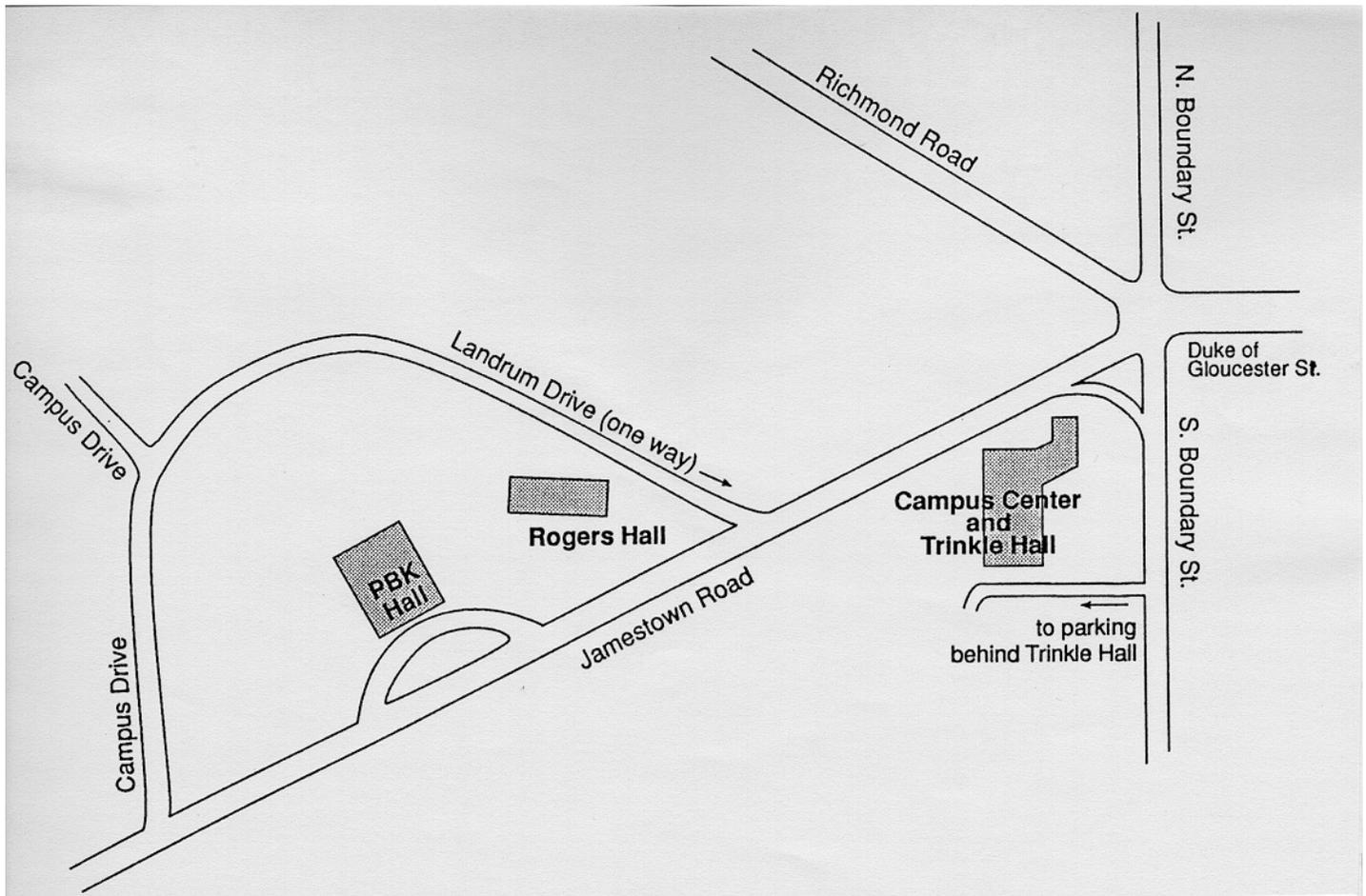
In 2005, the Society developed a new vision statement, **Improving people’s lives through the transforming power of chemistry**. This statement will be the driving force for all Society actions and initiatives in the future and will be the basis for the 2007-2009 strategic plan. It expresses the underlying principle that the road to better health, improved materials, more plentiful energy – and for that matter the road to solving most of our grand challenges – goes through chemistry. This presentation will illustrate how basic research has been used through applied research to improve people’s lives. The world of the 21st century is very different from the world of only 10 or 15 years ago. Today, advances in science and engineering and technological change which lead to innovation are the driving forces of the economy. We recognize that the capacity to create and use new knowledge is the key to our future prosperity.

## DIRECTIONS

From I-64, take the Williamsburg exit # 242 on to Route 199 in the direction of Busch Gardens. Stay on Route 199 for about 3 miles to the 4th traffic light. This is the intersection of Route 199 and Jamestown Road. Turn right on to Jamestown Road and go a little over a mile until you reach the W&M campus area on the left (see map below). Parking should be available in any of the lots beyond Campus Drive, with parking near PBK Hall being the closest to the Campus Center and to Rogers Hall. Dinner will be in the Little Theater in the Campus Center. The Campus Center/Trinkle Hall complex is about a 1/4 mile walk down Jamestown Road. From Jamestown Road, enter the Campus Center through the front entrance. The Little Theater is in the basement; there are stairs to the basement at either end of the foyer through a set of doors.

The Reception for Dr. Nalley and her lecture will be in Rogers Hall, located about 1/4 mile back up Jamestown Road from the Campus Center. It is just to the right of PBK Hall (as viewed from Jamestown Road). Due to construction in the area, Rogers Hall can be entered only at the far right end, near the new dormitories. Room 100 is at the far right end of the first floor of Rogers Hall as viewed from Jamestown Road.

## MAP



## RECEPTION FOR ACS PRESIDENT

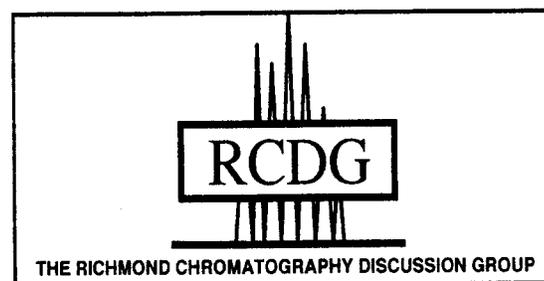
The Virginia Section is pleased to welcome Dr. E. Ann Nalley, President of the American Chemical Society, to our joint meeting with the Hampton Roads Section. A reception honoring Dr. Nalley will be held prior to the program on October 24. The reception and Dr. Nalley's talk will be held in Rogers Hall at the College of William & Mary in Williamsburg. Details of the meeting and information on the Dinner and Reception are on the front page of the *Bulletin*. In her address, Dr. Nalley will discuss some of the issues facing the ACS and plans for her presidency. There will be a dinner preceding the reception. Individuals who wish to attend the dinner must make dinner reservations by noon on October 19. The reception and meeting are open to the public without charge; no reservations are required for these events, only for the dinner. (Check page 37 of the Sept. 11, 2006 issue of *C&EN* for an article by Dr. Nalley on "Volunteers as Leaders.")



### \*\*\* VIRGINIA SECTION NEWS \*\*\*

## RCDG

On October 17, the Richmond Chromatography Discussion Group (RCDG) will sponsor a talk by Dr. Carl Wolf, Forensic Toxicology & Specialist Testing Lab Supervisor at Virginia Commonwealth University. The meeting will be at 5:30 p.m. at Philip Morris USA Research Center. The RCDG meets monthly for discussions of topics related to chromatography. For more information on RCDG or its meetings, or to have your name placed on their newsletter mailing list, contact Carol Sheets at (804) 358-9468, [Csheets@aderis.com](mailto:Csheets@aderis.com). Or check their website: [www.rcdg.org](http://www.rcdg.org).



## FUTURE MEETINGS OF THE SECTION

DATE: November 17, 2006  
 LOCATION: University of Mary Washington  
 Fredericksburg, Va.  
 HOST: Dr. Roy Gratz  
 PHONE: (540) 654-1412  
 SPEAKER: Dr. Leanna Giancarlo  
 TOPIC: "Galileo Galilei:  
 'Moving' toward Chemistry"

DATE: December 1, 2006  
 LOCATION: John Tyler Community College  
 Chester, Va.  
 HOST: Dr. Kristine Smetana  
 PHONE: (804) 706-5143  
 SPEAKER: Dr. Manfred Psiorz  
 TOPIC: "Obtaining Pharmaceuticals  
 from Plant Materials"

**Presentation of Teaching Awards**

## Chemistry at the College of William and Mary

The Department of Chemistry at the College of William and Mary offers B.S., M.S., and M.A. degrees. The department is noted for its undergraduate program which is built on a foundation of conscientious teaching and active research. Graduates may earn ACS certified degrees in chemistry, biochemistry, polymer chemistry, and chemical physics. Over the past 20 years, William and Mary has graduated about 45 chemistry majors per year and has consistently ranked in the top 10 schools nationwide for ACS certified degrees (5th for 2004-05). The degree requirements allow room for a wide variety of electives to attain a broad liberal arts education or other educational goals. A chemistry seminar program with speakers primarily from outside the College further complements the academic program. The student-run Chemistry Club offers social activities, chemistry magic shows, and programs on chemistry careers, postgraduate education, and other topics of interest.

The 16 faculty members of the Chemistry Department are committed to providing education of the highest quality. All lecture and laboratory courses are taught by the faculty, and personal interactions between faculty members and students are commonplace. Each faculty member is actively engaged in externally funded research in their special fields of interest with undergraduates and with Master's degree candidates. Several faculty members also mentor Ph.D. students enrolled in the Applied Science Department. A new building, scheduled for completion in Spring, 2008 will provide state-of-the-art facilities for the large number of majors that we support.



A special feature of the curriculum is the opportunity for students to participate in research. Typically, students begin working with faculty members in the junior year, although research opportunities exist for qualified freshmen and sophomores as well. Numerous papers from student research projects have been presented at national meetings and published in leading journals. In addition, the department supports one of the largest in house undergraduate summer research programs in the country for William and Mary chemistry students. Students earn a stipend and can live in a College dormitory at no cost. An average of 50 William and Mary undergraduate students participate in this program every summer. More details about our program, facilities, and faculty can be found on our web site at [www.wm.edu/chemistry](http://www.wm.edu/chemistry).

### QUESTIONS FROM THE PAST

This question was asked in the September Bulletin: On Dec. 13, 2005, Dr. Joseph Nagyvary, a professor emeritus at Texas A&M, was awarded a gold medal in Tokyo by the Japanese Society of Applied Physics. Dr. Nagyvary has spent 30 years researching Stradivarius violins and their composition. The gold medal recognized his discovery of nanocomposites in the varnish of the Stradivarius violin. Dr. Nagyvary presented some of his research on violins at a meeting of the Virginia Section. **When was that meeting and where was it held?** Bonus question: **Who played the violin that Dr. Nagyvary brought to the meeting?** On January 14, 1983, Dr. Nagyvary spoke on "Renaissance Chemistry and Violin Making in Cremona, Italy" at Virginia State University in Petersburg. He brought a violin that he had made by the "Stradivarius method". Dr. P. Larus Reed, concertmaster of the Petersburg Symphony Orchestra, demonstrated the violin.



Editor's Note: Dr. Reed is still the concertmaster of the Peterburg orchestra.

For more information on Dr. Nagyvary and his violins, check this website: [www.nagyvaryviolins.com](http://www.nagyvaryviolins.com).

A new question from the past: On September 22, 2006, Dr. William Rademaker received the Distinguished Service Award from the Virginia Section. In 1988, he was given the Section's Distinguished Service Award for High School Chemistry Teaching. Bill is the second person to have received both of these awards from the Virginia Section. **Who was the other person who was given both the Distinguished Service Award and the award for high school teaching?**

## **SOUTHEASTERN REGIONAL MEETING**

The 58<sup>th</sup> Southeastern Regional Meeting of the American Chemical Society, **SERMACS 2006**, hosted by the ACS Savannah River Section in collaboration with the AIChE-Central Savannah River Section, will be held at the Augusta Marriott Hotel & Suites in Augusta, Georgia, November 1-4, 2006. "Linking Chemistry in the Southeast" is the theme of the meeting. The program includes 25 symposia and a variety of special events including a Vendor Exposition, Graduate School Fair, Golf Tournament, Diversity Reception, and a Soirée on the Historic Augusta Canal. Some symposia of special interest include **Alternative Fuels–The Hydrogen Economy, Advances in Food Safety Sensors, Chemistry of Explosives, Chemistry of Drug Abuse, Chemistry & the Law, Catalysis in Organic Chemistry, Chemistry of Aging, Environmental Remediation Chemistry, Nucleic Acids Research, Applied Geochemistry, and Issues in Emergency Response**. Advance registration closes on October 9. Full information can be found at <http://www.sermacs2006.org>. The General Chair is Chris Bannochie [(803) 725-8088] and the Programming Chair is Tom Crute [(706) 667-4517].



## **CHEMISTRY SEMINARS AT THE UNIVERSITY OF VIRGINIA**

October 13 - **Professor Annelise Barron**, Northwestern University, "DNA Sequencing and Genotyping by Free-Solution Microchannel Electrophoresis of DNA-Polyamide Conjugates"

October 20 - **Dr. Russell Hemley**, Carnegie Institution of Washington

October 27 - **Professor Sherry Chemler**, University of Buffalo, "New Copper(II) Chemistry for the Synthesis of Nitrogen Heterocycles: Carboamination of Unactivated Olefins"

November 3 - **Professor Zhen Huang**, Georgia State University, "Atom-Specific Mutagenesis by Synthesis of Selenium Nucleic acids (SeNA) for Structure and Function Studies"

November 10 - **Professor David Y. Gin**, University of Illinois at Urbana-Champaign

November 17 - **Professor Thomas Kodadek**, University of Texas Southwestern Medical Center, "Chemical Approaches to Monitor and Manipulate the Proteome"

December 1 - **Professor Gustavo Scuseria**, Rice University

Chemistry colloquia are held at 4:00 p.m. in Room 304 of the Chemistry Building. The complete colloquium schedule is on-line at <http://www.virginia.edu/chem/newsandevents/seminars/>.

**CHEMISTRY SEMINARS AT VIRGINIA COMMONWEALTH UNIVERSITY**

October 5 - **Professor Sharon Huo**, Clark University, "Mapping the Early Steps of Amyloid Formation with Computational Approaches"

October 20 - **Dr. Bruno Ameduri**, National Graduate School of Chemistry (Montpelier, France), "Recent Advances in the Controlled Radical Polymerization of Fluorinated Monomers" - **1:30 p.m. in room 155 of the Life Science Building**

October 26 - **Dr. Liem X. Dang**, Pacific Northwest National Laboratory, "Recent Advances in Studies of Molecular Processes at Interfaces"

November 14 - **Professor Umesh R. Deai**, Virginia Commonwealth University, "Radical Approaches to Targeting Coagulation Enzymes"

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. Call (804) 828-1298 for more information.

**CHEMICAL ENGINEERING SEMINARS AT THE UNIVERSITY OF VIRGINIA**

October 12 - **Professor Randy Weinstein**, Villanova University

November 2 - **Professor Alexander Katz**, University of California, Berkeley

November 9 - **Professor Eric Kaler**, University of Delaware

December 7 - **Professor Christina Chan**, Michigan State University

Seminars are held at 11:00 a.m. in Room 005 of the Chemical Engineering Building. Call (434) 924-7778 for more information.

**CORRECTION ON CHEMICAL OLYMPIAD INFORMATION**

In the Summer issue of the Bulletin, Sydney Creutz of Albemarle High School was cited as "the only student from the Virginia Section who has ever been selected to attend the National Olympiad Study Camp." Dr. John Comerford, who worked with the Olympiad in the Virginia Section for many years, pointed out that this was an error. He noted that at least three other students from the Section have attended the Study Camp in Colorado. In 1994, two students from the Virginia Section, Nicholas Lohr from Chesterfield County and Elliot Brenner from Henrico County, were selected for the national study camp. Nicholas Lohr was one of four students who represented the United States in the International Olympiad where he earned a silver medal. Editor's Note: We would like to compile a history of the Virginia Section's involvement in the Chemical Olympiad. If you have any information on this, please send it to the Editor at [beckjd@juno.com](mailto:beckjd@juno.com). Dr. Ann Sullivan is the Coordinator for the 2007 Chemical Olympiad. Information on the Olympiad, including results for the 2006 testing, can be found on the Section website: <http://membership.acs.org/VVA/>.

**WORDS OF WISDOM FOR OCTOBER:**

*"It's What You Learn After  
You Know It All That Counts"*

## **NATIONAL CHEMISTRY WEEK**

**October 22-28, 2006**

**Theme: "Your Home—It's All Built on Chemistry"**



Information: <http://www.chemistry.org>

The Virginia Section will be participating in the National Chemistry Week celebration. Volunteers are needed to make this a successful event!

The National Chemistry Week Event will be held at the Science Museum of Virginia in Richmond from Thursday October 26 through Saturday October 28, 10 am - 4 pm each day. The special activities that are being planned will be free with the purchase of a general exhibit admission ticket at the SMV. Anyone who would like to volunteer and participate in this event should contact Dr. Kristine Smetana by e-mail to [ksmetana@jtcc.edu](mailto:ksmetana@jtcc.edu) or at (804) 706-5143.

Participants are also being solicited for the national NCW poster contest. Students in kindergarten through 12<sup>th</sup> grade can submit posters that recognize the NCW theme "Your Home—It's All Built on Chemistry". The poster should serve as a public service announcement emphasizing the role of science/chemistry in the home and/or home safety improvements over the years. The winning posters for the Virginia Section will be entered into the national competition. Please contact Kristine Smetana or visit the ACS Website at <http://www.chemistry.org/ncw> or call 1-800-227-5558, extension 6097 for more information on NCW and the poster contest. Posters must be received by October 20.

*The NCW Coordinator for the Virginia Section is Dr. Kristine Smetana, Associate Professor of Chemistry at John Tyler Community College. Contact her for information on NCW activities within the Virginia Section and to volunteer your help for this year's National Chemistry Week: (804) 706-5143; [ksmetana@jtcc.edu](mailto:ksmetana@jtcc.edu).*

**CHEMISTRY DEPARTMENTS AT COLLEGES AND UNIVERSITIES IN THE VIRGINIA SECTION**

<u>School/Location</u>	<u>Department Chair/ Program Coordinator</u>	<u>Phone/E-mail</u>
Bridgewater College Bridgewater, VA 22812	Dr. Joseph Crockett	(540) 828-5431 jcrocket @ bridgewater.edu
College of William & Mary Williamsburg, VA 23187-8795	Dr. Gary W. Rice	(757) 221-2540 gwrice @ wm.edu
Eastern Mennonite University Harrisonburg, VA 22802	Dr. Stephen G. Cessna	(540) 432-4403 cessnas @ emu.edu
Hampden-Sydney College Hampden-Sydney, VA 23943	Dr. C. William Anderson	(434) 223-6187 wanderson @ hsc.edu
James Madison University Harrisonburg, VA 22801	Dr. Donna S. Amenta	(540) 568-6246 amentads @ jmu.edu
Longwood College Farmville, VA 23909	Dr. Melissa Rhoten	(434) 395-2636 rhotenmc @ longwood.edu
Mary Baldwin College Staunton, VA 24401	Dr. Vladimir Garkov	(540) 887-7102 vgarkov @ mbc.edu
Randolph-Macon College Ashland, VA 23005	Dr. Serge Schreiner	(804) 752-7206 sschrein @ rmc.edu
St. Paul's College Lawrenceville, VA 23868	Dr. Sunday A. Adesuyi	(434) 848-6484 sadesuyi @ saintpauls.edu
Shenandoah University Winchester, VA 22601	Dr. John Happ	(540) 665-4591 jhapp @ su.edu
University of Mary Washington Fredericksburg, VA 22401	Dr. Kelli Slunt	(540) 654-1406 kslunt @ umw.edu
University of Richmond Richmond, VA 23173	Dr. William Myers	(804) 289-8249 wmyers @ richmond.edu
University of Virginia Charlottesville, VA 22901	Dr. Ian Harrison	(434) 924-3639 harrison @ virginia.edu
Virginia Commonwealth Univ. Richmond, VA 23284	Dr. Nicholas P. Farrell	(804) 828-1298 mpfarrel @ vcu.edu
Virginia State University Petersburg, VA 23806	Dr. Ralph Gatrone	(804) 524-5438 rgatrone @ vsu.edu
Virginia Union University Richmond, VA 23220	Dr. Dorothy Eseonu	(804) 257-5615 dneseonu @ vu.edu

## **ConSOL REPORT AND RECOMMENDATIONS**

On June 23-24, 2006, over thirty teachers joined with presenters from Virginia and other areas to consider ways to improve chemistry learning in Virginia, particularly in connection with the effect of the Standards of Learning (SOL) End of Course Chemistry Test and the Curriculum Framework. This report summarizes the results of that conference and, particularly, the recommendations of those in attendance for improvements in the way chemistry is taught and how students are evaluated. The recommendations have been presented to the Virginia Board of Education.

### **Conference attendees recognize strengths of the SOL “End of the Course” Chemistry Tests**

The tests address many basic chemistry concepts appropriately included in a high school chemistry course. The language is appropriate for grade level. The tests are age appropriate and most questions address one concept or item; graphs are used appropriately. Tests are of reasonable length, are untimed and are available both in printed form and on-line. Questions are peer constructed and reviewed.

The provision of a statewide minimum level of course content affords an indication of teaching effectiveness.

### **Recommendations for Improvements of SOL Chemistry Tests**

#### **I. Administration**

##### **A. Purpose of the SOL end-of-course test**

Teachers and some administrators are unclear about the use of test results. For teachers working with well-prepared students, the test appears to provide a confirmation of other testing results; for those with students less well prepared, the test becomes a threat. It is unclear that allowance is made for the enormous range of student capability encountered within and among the various school systems and other factors beyond the teacher's control.

##### **Recommendation:**

We suggest that a clear explanation of how the results are used would address many of these concerns. A clarification of the use of the test results with respect to current and projected NCLB requirements would also be appropriate. A single end-of-the-year test is unlikely to provide an accurate measure of performance for student, teacher or school.

We suggest a pre-test or other determination of initial capability of the students. This does not relieve the teacher of trying to bring the class to the highest possible level of achievement, but recognizes that that level will not be uniform for all classes. Similarly, students in an advanced class – honors or A.P. chemistry – would likely benefit from a test with broader coverage or more in-depth questions (as discussed below).

We support the suggestion by teachers that the test be renamed (perhaps, “SOL Chemistry Test”) to avoid the impression that instruction ends with taking the SOL test. The practice of exempting students from a final exam upon passing the SOL test denies the opportunity for learning that goes with preparation for that final exam and should be reconsidered by the schools currently employing that incentive to study specifically for the SOL.

#### **B. Protocols**

It is apparent that many teachers are either unfamiliar with or misinformed about the protocols associated with administration of the tests. Understandings evidently vary from district to district and, perhaps, within districts. For example, some teachers understand that a different teacher must proctor the test; most understand that they may not answer questions or otherwise interact with students during the test; the physical layout of the room is not specified, particularly for on-line testing - how close should students be? And what precautions are specified concerning possible cheating?

##### **Recommendations:**

A copy of the essential regulations should be made available to each participating teacher, either directly or by verified distribution within the school district.

A clear statement of Commonwealth policies is needed with respect to such matters as use of calculators, especially with respect to programmable calculators and memory storage. A statement concerning cell phones and other electronic devices would also be appropriate.

We support the teachers' call, to the extent possible, for having all testing for a course done on the same day throughout the Commonwealth, with a different version of the test being used for any make-up day(s). To minimize opportunities for cheating, particularly in crowded computer rooms, either the order of the questions or of the answers should be varied among the tests.

## **II. Construction of the SOL Chemistry test**

### **A. Formulation of the test bank**

It is evident that there has been effective preliminary screening of questions in the test bank for the chemistry SOL test with respect to statistical analysis for apparent difficulty. It is also apparent that subsequent controls over accuracy of content have failed in numerous instances: major errors in questions from the past five years belie the efficacy of existing checks and reviews. This reflects, at least in part, a total lack, during any of the numerous content reviews, of the same kind of professional statistics and testing expertise present in the preliminary stages. No professional practicing or college-level academic chemist participated at any stage in the preparation of the test. Harcourt Educational, as evidenced by a lack of understanding of the problems, similarly lacked such expertise. The resulting errors cast doubt on the validity of the test instrument itself. Teachers, including some who participated in the construction process, expressed concern that they are not prepared to make such judgments, being largely restricted to the same resources available to the students and not having the opportunity – or prior reason – to consult outside materials or chemists on the many topics covered in the course.

There was a considerable degree of confusion among the participants in the conference concerning the procedure for initial formulation of the questions for the SOL end-of-the year test. Only late in the conference was it discovered that, contrary to prior understandings, the questions are written by teachers not from Virginia. It is not clear that this restriction has any advantage and the remoteness of the initial question writers obviates interaction with subsequent reviewers. Since the tests are not made available for scrutiny outside the Department of Education for many months after their administration, there is no opportunity for corrective action once errors are discovered.

#### **Recommendations:**

A test bank panel should be established to assure the accuracy of all questions used for the SOL chemistry test. This panel should be composed of professional university level chemists; experienced high school teachers; assessment expert(s) (State and/or testing organization); and measurement expert(s). The panel should align questions with the Framework, making certain that chemical reactions are authentic with respect to actual compounds and context; formulate policy to address incorrect test items; review all questions in the current test bank with respect to these criteria; and formulate or screen all items prior to their addition to the test bank.

## **III. Content**

### **A. Effect on curriculum**

Conferees recognized that questions on the SOL chemistry test significantly affect curriculum and time spent on various topics. There was general agreement that concern for test results limits activities not specifically included in recent tests or the SOL Curriculum Framework, particularly laboratory work. It was noted that participation in Science Fairs has decreased markedly, and much of that was attributed by teachers to the need to prepare students for the SOL chemistry test.

### **B. Concepts and Critical Thinking**

A particular concern was the lack of questions on recent SOL tests requiring critical thinking skills. Related to this is the question of “covering” a topic vs. uncovering the fundamental laws and theories underlying that topic. Conferees agreed that categorizing topics by subject only is insufficient.

#### **Recommendations:**

It is recommended that a panel be constituted to review content and emphasis of topics in the SOL Chemistry Curriculum Framework and tests. The panel composition should be similar to the SOL Chemistry Test Bank Panel, even with one or more members in common. The panel would formulate a distribution of questions with respect not only to chemistry topics but also to cognitive domains (factual information; vocabulary; mathematical problems; conceptual problems involving interpretation of data and critical thinking), establishing the weight for each topic on the test.

The current revision period for the Curriculum Framework should be substantially shortened to allow incorporation of newer developments and provision should be made for correcting errors within the revision period. Erroneous statements should not remain in the Framework for up to seven years before a correction is made.

It was pointed out that a critical thinking set of objectives was formerly listed; it is suggested that they be restated.

In summary, the participants in the conference recognize and appreciate the enormous task facing the members of the Board of Education and the Staff in attempting to meet goals established not only under SOL but by the more recently announced NCLB legislation. We support the intent and approach of the SOL Framework and tests; our recommendations are toward improving both, not substituting an untested alternative. Toward that end we offer our continuing support and will welcome the opportunity to consider with the appropriate members of the Board and/or BOE Staff the recommendations presented here as well as other matters of mutual concern.

## THE BULLETIN

Published eight times a year by the  
American Chemical Society  
Virginia Section

Science Museum of Virginia  
2500 West Broad Street  
Richmond, VA 23220

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

NON-PROFIT ORGN.

U.S. POSTAGE  
PAID

Richmond, Virginia  
Permit No. 1231

---

### OFFICERS OF THE VIRGINIA SECTION OF THE ACS

---

#### Chair - Dr. Dorothy Eseonu (804) 257-5615

Chair-Elect - Dr. Will Lewis (804) 274-5869

Secretary - Mr. Kenneth Chapman (804) 448-4852

Vice Chair - Mr. Charles (Trey) Gregory (804) 504-8840

Treasurer - Dr. Brian Moores, (804) 227-3149

Bulletin Editor - Dr. James Beck (804) 733-5286

Bulletin Publisher - Dr. Will Lewis (804) 274-5869

---

### ***CAN YOU IDENTIFY THESE PERSONS?***



The photograph is from 2001. The two persons shown have both served as chair of the Virginia Section. He holds degrees from the University of Pittsburgh and Duke University and is now on the faculty at the University of Mary Washington in Fredericksburg. She is a graduate of Virginia State University and now works in Quality Assurance at Wyeth Pharmaceuticals in the Richmond area. Both have served on the Virginia Section Executive Committee for many years.

The couple shown in the September Bulletin are Juanita and James Wightman, who recently celebrated their 50<sup>th</sup> wedding

anniversary. Jim is Professor Emeritus of Chemistry at Virginia Tech.

