



The Bulletin
of the
Virginia Section
AMERICAN CHEMICAL SOCIETY

NOVEMBER MEETING NOTICE

**University of Mary Washington
Fredericksburg, Virginia**

Friday, November 18, 2005

SOCIAL HOUR: **6:00 p.m.**
Faculty Dining Room
Seacobeck Hall
College Avenue

DINNER: **6:30 p.m.**
Faculty Dining Room
Seacobeck Hall

PROGRAM: **7:30 p.m.**
Room 100, Jepson Science Center, College Avenue

MENU: Tossed Salad with Assorted Dressings, Carved Turkey, Virginia Ham with Raisin Sauce, Homestyle Stuffing, Mashed Potatoes with Gravy, Fresh Green Beans, Dilled Baby Carrots, Yeast Rolls with Whipped Butter, Selection of Cakes and Tortes, Coffee, Hot Tea, Iced Tea

PRICE: Members /Guests - \$17.00; Students, High School Teachers, Retired ACS Members/Spouses, Retired Teachers/ Spouses - \$9.00

DINNER RESERVATIONS: Please make reservations by **NOON on Tuesday, November 15** by calling Mary Washington College at (540) 654-1016.

HOST: Dr. Roy F. Gratz, (540) 654-1412, rgratz@umw.edu

SPEAKER: **Dr. John J. Meister**
Forest Products Research Center, New Mexico

TOPIC: **“Your Garbage = My Reactants: Trash Recycling”**

NOVEMBER 2005

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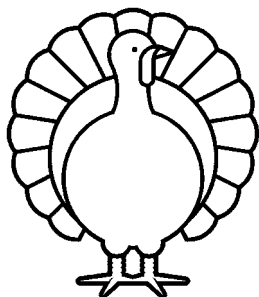
Dr. John J. Meister

John Meister is a chemist involved in the synthesis, application, and analysis of polymers. He worked his way through Pennsylvania State University as a dishwasher and laboratory technician before attending the California Institute of Technology as a graduate student in chemistry and physics. After working in the oil industry for 5 years as a research scientist designing better ways to recover oil from oil reservoirs, he entered academia and is now an associate professor of analytical and polymer chemistry at New Mexico Institute of Mining and Technology. John specializes in developing new polymers that can be made from natural products such as lignin and wood. He has designed process polymers based on lignin and wood. He has designed process polymers based on lignin for use in oil recovery and mineral processing. He is currently developing plastics from forest products and methods to form composites using parts of the corn plant.



“Your Garbage = My Reactants: Trash Recycling”

Technical solutions to social-technical problems, such as the warming of the planet by the greenhouse effect and the loss of energy supplies caused by the consumption of fossil fuels, often involve the utilization of biomass. There are many sources of biomass, ranging from sewage sludge to lobster hulls, but the bulk of this material is one of the two most common natural polymers, cellulose and lignin. Lignin is a wood processing residue of paper production or ethanol fermentation that is often burned as fuel. A method of grafting lignin has been developed that allows water-soluble and plastic graft copolymers of lignin to be made. The grafting reaction is a solution polymerization often run in aprotic, polar, organic solvents. The cationic copolymers are made by conducting the reaction with dimethyldiprop-2-enylammonium chloride, (3-oxy-4-oxo-5-methylhex-5-enyl) trimethylammonium chloride. The plastics are made with 1-phenylethene and 4-methyl-2-oxy-3-oxopent-4-ene. The lignins grafted have been obtained from pine by the kraft process. This same reaction can also be run to run thermoplastic graft copolymers of lignin. These materials are being tested for applications as consumer plastics and as coupling agents in forming wood composites. The materials have also been shown to be biodegradable plastics and are being developed as materials for packaging and consumer products.



HAPPY THANKSGIVING

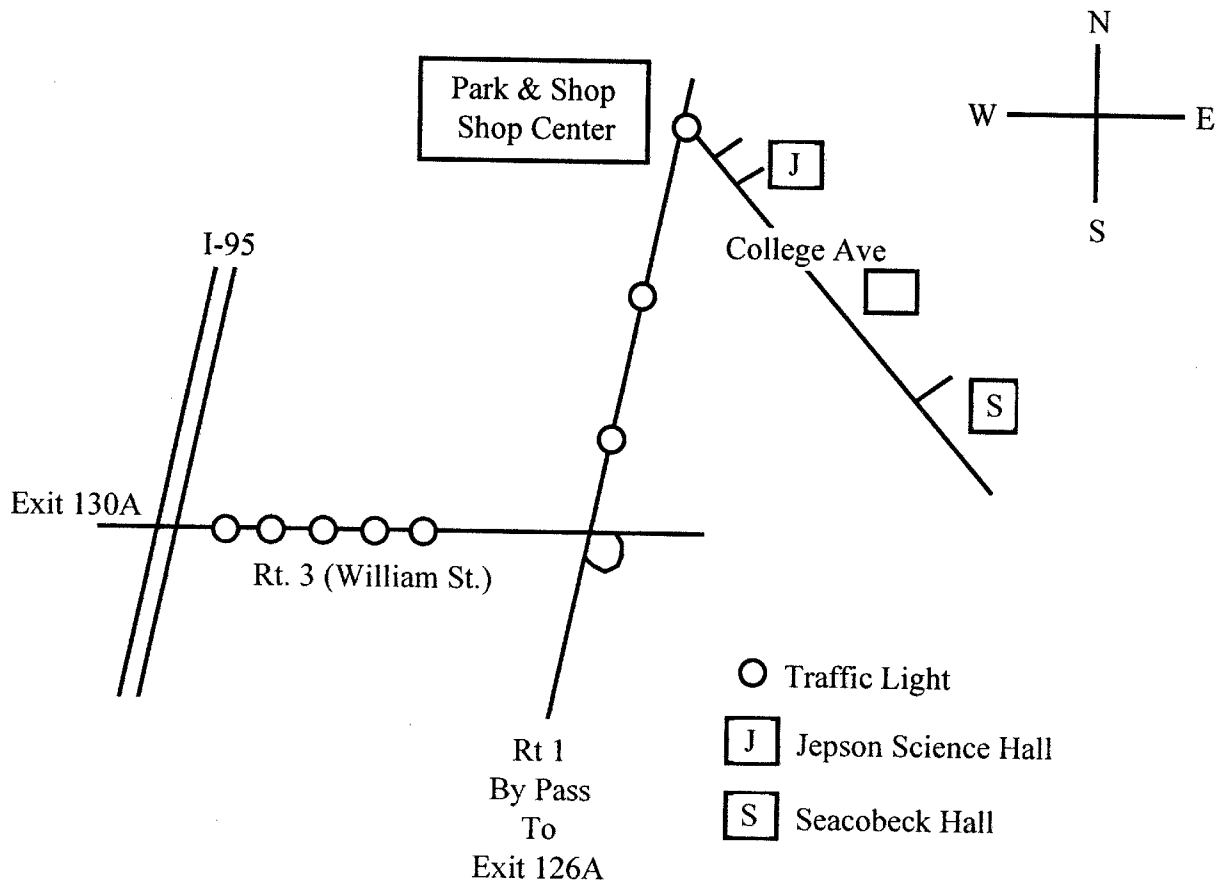
DIRECTIONS

Fredericksburg is located just off I-95 about 50 miles north of Richmond.

Traveling from the south on I-95, take Exit 126A, Rt. 1, north to Fredericksburg. Stay on the Rt.1 bypass (a four lane divided highway, with the usual interstate exit clutter for the first mile) for about four miles until you get to College Avenue (traffic light, across from the Park and Shop Shopping Center with a Giant Food store). Turn sharp right on to College Avenue and make the second left (< 1/4 mile) into the parking lot at the Jepson Science Center or park on College Avenue. Walk along College Avenue to the second building past Jepson Hall; enter Seacobeck Hall by the north rear door.

From the west, come into Fredericksburg on Rt. 3 (William Street). About one mile from I-95 (Exit 130A) turn north on the Rt. 1 bypass (turn right on the cloverleaf after passing under Rt. 1). Go about one mile until you get to College Avenue (3rd traffic light, across from the Park and Shop Shopping Center with a Giant Food store). Turn sharp right on to College Avenue and make the second left (< 1/4 mile) into the parking lot at the Jepson Science Center or park on College Avenue. Walk along College Avenue to the second building past Jepson Hall; enter Seacobeck Hall by the north rear door.

MAP OF THE UNIVERSITY OF MARY WASHINGTON



***** VIRGINIA SECTION NEWS ********FUTURE MEETING***

DATE: December 2, 2005
LOCATION: Afton Research Center
Richmond
HOST: Rob Davidson
PHONE: (804) 788-6327
SPEAKER: Dr. Kevin M. Dunn
TOPIC: "Caveman Chemistry: Hands-On
Projects in Chemical Technology"

PRESENTATION OF TEACHING AWARDS***DECEMBER SECTION MEETING***

The December meeting of the Virginia Section will be held at the Afton Research Laboratories in Richmond on Friday, December 2. This will be a special meeting featuring:

- **presentation of the Section's teacher awards**
- **tours of the Afton Research Center**
- **"Caveman Chemistry" presented by Dr. Kevin Dunn**

The Distinguished Service Award for High School Chemistry Teaching will be presented to Ms. Pam Edwards from Matoaca High School in Chesterfield County. Mr. Gary Graham from Chancellor Middle School in Spotsylvania County will receive the Distinguished Service Award for Middle School Science Teaching. The Afton Research Center (formerly the Ethyl Research Center) houses research laboratories and testing facilities relating to petroleum additives. Dr. Kevin Dunn is a professor of chemistry at Hampden-Sydney College. He has developed a series of hands-on chemical projects to engage chemistry students. His book *Caveman Chemistry: 28 Projects, from the Creation of Fire to the Production of Plastics* was published in 2003. It was reviewed in **Chemical Heritage**, the news magazine of the Chemical Heritage Foundation, in its Fall, 2005 issue.

Mark your calendar for December 2 and plan to attend this special meeting.

CHEMISTRY AT THE UNIVERSITY OF MARY WASHINGTON

After forty years in Combs Hall, the chemistry program at the University of Mary Washington is now beginning its eighth year in the Jepson Science Center. The facility provides student research space; modern teaching labs, including an organic chemistry lab with hood space for every student; and state-of-the-art multimedia and Internet capabilities. Seven full-time faculty teach a traditional chemistry major with 10-15 graduating seniors each year. In addition to the standard majors' courses, the program requires of all students a senior-level course on organic structure determination, separations, and spectroscopy and one seminar presentation. A full year of biochemistry is available as an elective, as are courses in instrumental analysis and environmental chemistry. The general chemistry and analytical programs use several cooperative, discovery-based experiments in the laboratory. The department is well-equipped, providing all students with hands-on experience with a variety of techniques and instruments, including H-NMR, C-NMR, FT-IR, GC/MS, ICP, and a scanning probe microscope. There are numerous computers for student use in the labs, classrooms, and the chemistry computer room. UMW chemistry graduates have earned advanced degrees at schools such as UVA, VCU, MIT, Princeton, Florida, Johns Hopkins, and Maryland and medical degrees at UVA, MCV, and EVA. Other graduates have gone directly to work at government labs including NIH, the Naval Research Lab, and the Patent Office, or for industries such as Dow Chemical, Philip Morris, Wyeth, and Virginia Power.



**JEPSON SCIENCE CENTER
AT
THE UNIVERSITY OF
MARY WASHINGTON**

CHEMISTRY SEMINARS AT THE UNIVERSITY OF VIRGINIA

Nov. 4 - **Professor Geert-Jan Boons**, University of Georgia, "Telling Glycosidase Inhibitors What to Do"

Nov. 18 - **Professor Lanny Liebeskind**, Emory University, "Organometallic Enantiomeric Scaffolds: An 'Organometallic Chiron' Approach to Asymmetric Synthesis"

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/>.

CHEMICAL ENGINEERING SEMINARS AT THE UNIVERSITY OF VIRGINIA

November 10 - Professor T. Kyle Vanderlick, Department of Chemical Engineering, Princeton University, "*Driving Biological Membranes to the Breaking Point: Fundamental Studies using Lipid Vesicles*"

November 17 - Professor Sheryl Ehrman, Department of Chemical and Biomolecular Engineering, University of Maryland, "*Nanoparticle-Based Materials: Scaled-Down Chemical Engineering*"

December 1 - Professor Sharon Glotzer, Department of Chemical Engineering, University of Michigan, "*Assembling Nanoparticle and Colloidal Building Blocks for Next Generation Materials: The Shape(s) of Things to Come*"

December 8 - Professor Andrew Gellman, Department of Chemical Engineering, Carnegie Mellon University, "*Enantioselectivity on Naturally Chiral Surfaces*"

Seminars are held at 11:00 a.m in Room 005 of the Chemical Engineering Building.
For more information, see <http://www.che.virginia.edu/cheneur/seminar.html>.

CHEMISTRY SEMINARS AT VIRGINIA COMMONWEALTH UNIVERSITY

Thursday, November 17 - **Christopher Cahill**, George Washington University

Tuesday, November 29 - **Prof. Trevor M. Penning**, Department of Pharmacology, University of Pennsylvania, "*Aldo-keto Reductases and Polycyclic Aromatic Hydrocarbon Activation*"

Seminars are in the Kapp Lecture Hall, Room 1024, in the Mary E. Kapp Wing of Oliver Hall, 1001 West Main St., unless otherwise noted. Refreshments at 3:45 PM; Seminar at 4:00 PM. Further information: call (804) 828-1298.

QUESTIONS FROM THE PAST

This question was asked in the October issue of the Bulletin: The Virginia Section received an award from the ACS at the Miami Beach national meeting for being the Outstanding Local Section in the medium-large category. Sheryl Baldwin received the award for the Section. Others in attendance at the awards ceremony included Allan Powell, Councilor; Oscar Rodig, Councilor; and Jerry Bass, Alternate Councilor. **What year was the award given to the Virginia Section?** The year was 1989. The Award was based on activities of the Section during 1988, when Charles (Eddie) Thomas was Chair of the Section. Activities that were cited as exemplary included National Chemistry Day, The Bulletin, the Chemistry Olympiad, the Vendor's Show, and the Spring Poster Session. Eddie is now a Councilor for the Virginia Section.

New question: In 1989 Dr. William Neville, the Region IV Director of the ACS presented a certificate of achievement to the Virginia section at the Annual awards Meeting, held at Virginia Commonwealth University on September 22 of that year. At that meeting, the Section presented its Distinguished service Award to a native of Tazewell, Virginia who had served for 14 years as the Director of the Virginia Institute for Scientific Research. **Who was this 1989 award recipient?**



REPORT ON THE SEPTEMBER AWARDS MEETING

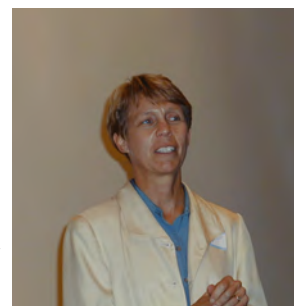
The annual Awards Meeting was held at Virginia Commonwealth University in Richmond on Friday, September 23. Dr. Joseph Pompano, Chair of the Virginia Section, presided. Dr. Ann Sullivan, Chair of the Chemistry Olympiad Committee, described the nature of the Chemistry Olympiad, which gives high school students an opportunity to compete at the regional, national, and international levels. She gave examples of questions used on the examinations given to students in the Virginia Section. The Section has had excellent participation from many schools.



Dr. Sullivan introduced Mr. Marvin Curry who has taught chemistry at Albemarle High School in Charlottesville for 31 years. He, in turn, introduced his outstanding student, Ms. Sydney Creutz who excels in linguistics and music as well as in chemistry. She was on the academic competition team that placed first in the state competition. Ms. Creutz did very well on the Olympiad examination for second-year chemistry that was administered to students in the Virginia Section. She took the national Olympiad exam and scored high enough to qualify for one of only 20 places on the national Olympiad Study Team. These select students spent two weeks at the Air Force Academy in Colorado Springs, studying, developing laboratory skills, and taking more examinations. Four of those students were selected to compete in the International Chemistry

Olympiad, held in Taipei, Taiwan. Ms. Creutz showed slides of her experiences at the Air Force Study Camp. Dr. Joseph Pompano presented Sydney with an embossed copy of the *Merck Index* from the Virginia Section to honor her accomplishments and Dr. Sullivan presented her with an award from the national ACS.

Dr. Pompano then recognized Dr. Sally Hunnicutt from Virginia Commonwealth University, for her work on National Chemistry Week. She has helped to coordinate the Section's NCW activities for many years. Dr. Pompano presented her with a certificate from the national ACS to honor her achievements.



Dr. Roland Moore, Dean of the School of Science and Mathematics at J. Sargeant Reynolds Community College in Richmond, introduced Dr. Ann Sullivan, recipient of the Virginia Section's Distinguished Service Award for 2005. Dr. Sullivan gave an interesting presentation, complete with demonstrations, on "Teaching Science Using Toys." Dr. Pompano presented Dr. Sullivan with a plaque and a gift from the Virginia Section to honor her achievements. He thanked her for her years of service in various Section offices, including Section Chair, Alternate Councilor, Webmaster, and Director of the Chemistry Olympiad. [editor's note: An article on Dr. Sullivan and her accomplishments can be found on the J. Sargeant Reynolds website http://www.reynolds.edu/_news/.]

WORDS OF WISDOM FOR NOVEMBER: **Blessed Are The Flexible For They Shall Not Be Bent Out Of Shape**

THE BULLETIN

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CAN YOU IDENTIFY THIS PERSON?

The photograph is from 1987. The individual shown on the left is Mr. William Raines, Principal of Albemarle High School. He is presenting a certificate to the recipient of the Virginia Section's 1987 Award for Distinguished Service in High School Chemistry teaching. The Award recipient holds a B.S. degree from Florida State University and an M.Ed. from the University of Virginia. He began teaching at Albemarle High School in 1974. He served as President of the Virginia Association of Science Teachers and was a Dreyfus Master Teacher in 1984. He taught Dreyfus Outreach Workshops and was Chairman of the Chemical Standards of Learning Committee.



Dr. Robert Hill Kean was the "mystery person" shown in the October Bulletin. He was the Section Chair in 1944 and received the Distinguished Service Award in 1957.

