

Chesapeake Chemist

*Maryland Section
American Chemical
Society*

MARYLAND CHEMIST AWARD



Dr. Michael F. Summers

Wednesday, December 8, 2004, Burkshire Hotel, Towson

MARM 2005 update

The 37th Middle Atlantic Regional Meeting (MARM 2005), hosted by the North Jersey Section, will be held at Rutgers University, Busch Campus, Piscataway, NJ, May 22-25, 2005. The theme of the meeting is "Chemistry at the Crossroads of Science" and will feature the most popular technical programming combined with the best features of a National ACS meeting tailored to the needs and interests of area scientists. Abstract submissions are sought from undergraduate and graduate students, and from professional industrial and academic chemists in all areas of chemistry.

The meeting will feature invited speakers at major symposia including "Bench to Pilot Plant," "Visions in Chemistry" (sponsored by Aventis), "Environmental & Green Chemistry," "Pharmaceutical Profiling," "Protein Family-Targeted Medicinal Chemistry - The Practice of Medicinal Chemistry in the Age of Chemogenomics," "Advances in Organic Chemistry," "Organometallic Catalysis," "Novel Instrumentation and Applications of Mass Spectrometry in ADME Studies," "Functional Proteomics and Cell Signaling," "Biomarkers: Quantification, PK/PD Correlation and Bioanalytical Issues," "Applications of LC-MS in Drug Discovery/Development," "Solid State and Materials Chemistry," "Nanoscience and Technology and Solid State & Materials Chemistry/Surface Chemistry," "Materials Chemistry/Inorganic & Organic Polymers," and "ADMET at the Crossroads of Drug Discovery."

In addition, there will be a special symposium, sponsored by the Organic Chemistry Division, honoring a Cope Scholar Awardee. Several chemical engineering mini-courses will also be offered by ACS & AIChE. The Waksman Antibiotic Drug Discovery Process will receive an ACS National Landmark Award for developing the cure for TB and many other infectious diseases. The Waksman National Chemical Landmark Symposium will mix history with modern antibiotic discoveries. The Regional Innovation awards will also feature a related symposium.

Sunday, May 22, 2005, designated "Science Education and Career Day," will celebrate the 100th anniversary of the New Jersey Science Teachers Association. High-school students, their parents and their teachers from throughout the region are encouraged to attend. Events will include chemistry and physics demonstrations, showings of the IMAX film "Volcanoes of the Deep" with commentary by the science advisor for the film, student and industrial panels to discuss college and career opportunities in several areas, symposia in several disciplines centered about the theme "100 Years Then and Now," workshops for teachers, poster presentations and lunch with a scientist. The program will provide unique opportunities for students, teachers, and scientists from diverse disciplines to mix with each other in an informal, informative atmosphere.

In addition to technical symposia there will be a number of special events including an awards banquet on Wednesday evening where 50-year members will be honored along with the winners of a number of ACS regional awards. Special lunches will be held for Senior Chemists and the Women Chemists Committees.

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Maryland Section on the web: <http://mdchem.org>

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December Dinner Meeting

Wednesday, December 8, 2004, Burkshire Hotel, Towson, MD

6:00 - 6:45 PM	Registration and Social
6:45 - 7:45 PM	Dinner
7:45 - 8:00 PM	Maryland Chemist Award Presentation
8:00 - 9:00 PM	Dr. Michael F. Summers, Department of Chemistry and Biochemistry University of Maryland at Baltimore County

Cost for the dinner is \$25.00 for members; \$20.00 for spouses, retired chemists and guests, and \$10.00 for students. For reservations please contact Shirish Shah at 410-323-0803(H) or by email at dr.shah@juno.com.

NMR studies of retroviruses: The molecular basis of dimeric genome packaging

All retroviruses encapsidate two copies of their full-length genomes as they assemble in infected cells. Two RNA molecules are required for strand transfer-mediated recombination during reverse transcription, which allows viruses to overcome otherwise deleterious strand breaks and to rapidly respond to evolutionary pressure. Genomic RNA exists in virions as dimers, and the overlap of RNA elements that promote dimerization and encapsidation suggests that these processes may be coupled. Both processes are mediated by the nucleocapsid domain (NC) of the retroviral Gag polyprotein. We have discovered that dimerization-induced register shifts in base pairing within the Psi-RNA packaging signal of Moloney Murine Leukemia Virus (MLV) expose conserved UCG elements that bind NC with high affinity. These elements are base-paired and do not bind NC in the monomeric RNA. The structure of the NC complex with a 101-nucleotide "core encapsidation" segment of the MLV Psi-site reveals a network of interactions that promote sequence- and structure-specific binding by NC's single CCHC zinc knuckle. The structure was determined using a novel approach that involved analysis of 3D and 4D ^{13}C -edited NMR data obtained for nucleotide-specific, isotopic ally-labeled samples. Our findings support a structural RNA switch mechanism for genome encapsidation, in which protein binding sites are sequestered by base pairing in the monomeric RNA and become exposed upon dimerization to promote packaging of a diploid genome.

Directions to the Burkshire: Take exit 25, Charles Street, from 695. Follow Charles Street about 2 miles to Towsontown Blvd. Turn left. Follow Towsontown Blvd to West Burke Ave. Bear right onto West Burke Ave. The Burkshire is on the left side as you enter West Burke Ave. Meeting attendees should proceed to the left lane. Turn left into the Burkshire's parking entrance. Turn the corner and make an immediate right into the P2 parking garage. Please the press intercom button for admittance to the elevators. Proceed to the front desk to get a parking pass required for your car. Look for signs posted in the lobby and elevators to locate the dining room.

Biographical Sketch:

Dr. Michael F. Summers obtained his undergraduate degree in chemistry from the University of West Florida in 1980. He earned his Ph. D. degree in bioorganic chemistry from Emory University, Atlanta, Georgia, in 1984. For his post-doctoral work (1984-1987), he moved to Maryland, to the National Institutes of Health, Bethesda, and the Federal Drug Administration, Rockville. He joined the Department of Chemistry and Biochemistry, University of Maryland at Baltimore County in 1987. He was promoted to associate professorship in 1992 and to full professorship in 1999. Since then he also has been doing his pioneering research as an associate investigator at the Howard Hughes Medical Institute. He has published numerous research papers in professional journals such as Nature, Science, etc. He serves as the associate editor, Journal of Molecular Biology, has been a member of the Editorial Boards of Journal of Molecular NMR and Protein Science. The Maryland Distinguished Young Scientist Award (1994 and 1996) and White House Presidential Award for Science, Engineering and Math Mentoring (2000) are among the numerous awards Dr. Summers has been received.

Maryland Chemist citation

The Maryland Section of the American Chemical Society Maryland Chemist Award 2004 is presented to Michael F. Summers in acknowledgement of his innovative research contributions to the twin areas of the biological chemistry and biophysics at the molecular level and in recognition of his highly creative and incisive insight into the sub-microscopic molecular binding of the retroviruses, the development of novel methodology incorporating 3D and 4D ^{13}C -NMR data analysis and the discovery of the structural RNA switch mechanism. Awarded this 8th day of December 2004 with the admiration, and appreciation of his fellow professionals.

Nominations for the 2005 Maryland Chemist Award

The Maryland Chemist Award Committee is accepting nominations and recommendations for the 2005 Maryland Chemist Award. Supportive documentation should include copies of the resume of the nominee and his/her list of publications. A short statement describing the outstanding contributions of the nominee to scientific research, education, industry, technology, etc., will be helpful and appreciated. Please send nominations to S. Munavalli, 700 Paige Circle, Bel Air, MD 21014. The deadline for submission of nominations is **April 15, 2005**.

Section news

The following SAACS Chemistry Clubs received an honorable mention for their 2003 activities: Anne Arundel Community College, Frostburg State University, Morgan State University, and Towson University. Also, at the national meeting in Philadelphia, Albert Einstein High School received an award from the ACS's Chemagination program.

Maryland Chemist Award

The Maryland Chemist Award was established in 1962 to recognize and to honor, each year, a member of the Maryland Section for outstanding achievement in the fields of chemistry. The achievement, as originally stated, may be in pure or applied chemistry, chemical engineering, or chemical education. Some recipients have distinguished themselves in management.

The section's Bylaw VIII establishes the rules of selection of recipients of the Maryland Chemist Award. Recommendations of the Awards Committee must be approved by the section officers. The applicable section of Bylaw VIII is quoted below:

"Recipients of the Maryland Chemist Award must have been members of the section for a minimum of five years and have made outstanding contributions to chemistry as defined in the Constitution of the Society (chemistry is defined in broad terms). The work on which the award is based should have been performed in Maryland."

Previous Recipients of the Award

1962 E. Emmet Reid	1976 Richard L. Hall	1990 Alex Nickon
1963 W. Mansfield Clark	1977 Henry C. Freimuth	1991 Cecil H. Robinson
1964 Alsoph H. Corwin	1978 Gunther L. Eichhorn	1992 Craig A. Townsend
1965 John C. Krantz, Jr.	1979 Emil H. White	1993 Ernest F. Silversmith
1966 Belle O. Talbot	1980 M. Gali Sanchez	1994 Yale H. Caplan
1967 Walter S. Koski	1981 Paul O. P. Ts'o	1995 Richard H. Smith, Jr.
1968 George L. Braude	1982 Joseph L. Katz	1996 Shekar Munavalli
1969 Leslie Hellerman	1983 Shih-Yi Wang	1997 WuCheng Cheng
1970 Paul H. Emmett	1984 Nicolas Zenker	1998 Joel F. Liebman
1971 Giles B. Cooke	1985 John Lambooy	1999 Marc D. Donohue
1972 Arnold M. Seligman	1986 David F. Roswell	2000 Haleem J. Issaq
1973 Lester P. Kuhn	1987 Gary H. Posner	2001 Raymond A. Mackay
1974 Joyce J. Kaufman	1988 Edward J. Poziomek	2002 R. S. Hosmane
1975 Benjamin Witten	1989 Catherine C. Fenselau	2003 Linda M. Sweeting

Marm 2005 continued

There will also be a "Roving Feast" Monday and Tuesday evenings, May 23 and 24, in conjunction with special programming, vendor exhibits, and posters. Student affiliates will have a full program for sharing their research, outreach programs, eminent scientist lecture and life in their chapter.

The online abstract program and advance registration opens November 16. Abstracts will be accepted until March 15. Submit online through the MARM 2005 website at www.marmacs.org, and visit the website for periodic program updates. For more information, please contact the Technical Program Co-Chairs, Les McQuire at leslie.mcquire@pharma.novartis.com or Joseph Potenza at jpotenza@rutchem.rutgers.edu.

December Historical Events in Chemistry

by Leopold May, The Catholic University of America, Washington, D.C.

- December 2, 1867 Nikolai M. Kishner, who was born on this date, contributed to the Wolff-Kishner reduction of aldehydes and ketones.
- December 3, 1886 Karl Manne Georg Siegbahn, a researcher on x-ray spectroscopy, was born on this date. He received the Nobel Prize in Physics in 1924 for his discoveries and research in the field of X-ray spectroscopy.
- December 5, 1974 The first paper on ion chromatography was submitted to *Analytical Chemistry* by H. Small, T. S. Stevens, and W. C. Bauman (*Anal. Chem.*, 1975, 47, 1801-1809). It was entitled "Novel Ion Exchange Chromatographic Method Using Conductimetric Detection."
- December 9, 1919 William N. Lipscomb, researcher on boranes, was among the first to describe 3-dimensional structure of enzymes & proteins. In 1976, he received the Nobel Prize for his studies on the structure of boranes illuminating problems of chemical bonding. He was born on this date.
- December 12, 1866 Alfred Werner, who was born on this date, was a researcher in coordination chemistry. He was awarded the Nobel Prize in 1913 for linkage of atoms in molecules, complex inorganic compounds, stereochemistry, & coordination theory of valency.
- December 16, 1929 Birthdate of Bruce N. Ames, who developed the Ames Test, an indicator of carcinogenicity of chemicals that measures the rate of mutation by a chemical in bacteria.
- December 17, 1778 Birthdate of Humphry Davy, who discovered potassium in 1807, sodium in 1807, barium in 1808, and strontium in 1808. He invented the Davy mine safety lamp.
- December 20, 1890 Birthdate of Jaroslav Heyrovsky, who invented the polarographic method of analysis. He was awarded the Nobel Prize in 1959 for his discovery and development of the polarographic methods of analysis.
- December 23, 1829 Birthdate of Ago Paul Schützenberger, a researcher in physiological chemistry. He prepared cellulose acetate in 1865 with Laurent Naudin.
- December 24, 1979 Charles Weissmann and colleagues showed that they had produced interferon using recombinant DNA technology.
- December 25, 1904 Gerhard Herzberg was born on this date. He was a researcher on the electronic structure and geometry of molecules and free radicals using spectroscopy. In 1971, he received the Nobel Prize for his contributions to the knowledge of electronic structure and geometry of molecules, particularly free radicals.
- December 29, 1879 Birthdate of Ellen Gledirsch, who made accurate measurements of the half-life of radium.
- December 31, 1921 Gilbert Stock, who was born on this date, did research in alkylation, acylation, and vinyl ring radical cyclization. He also developed the theory of concerted polyene cyclization.

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Maryland Section has new website

Bookmark the section's updated website at www.mdchem.org for all the latest information on the section's activities, planned events, and contact information for officers and committee members. Information on section activities, etc., is also available at Dr. Shah's webpage: www.towson.edu/~sshah.

Also, don't forget, that the Chesapeake Chemist is available on the web as well as by email. For faster delivery, provide the editor with your email address at cakvt@hotmail.com.



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