



THE

CHESAPEAKE CHEMIST

MARYLAND SECTION
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NUMBER 8



JOSEPH A. DOMANICO



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DEAR MEMBERS:

In my last letter I shared highlights, future plans and concerns with our membership.

Our organization has done wonderful jobs with the help of volunteers (from veterans to youth) over many decades. For our Section to receive the national award was a very special occasion in the summer of 1996. Dr. Shekar Munavalli (1995 Chair) and our councilors attended the ceremony in Orlando on August 27. So it is natural for us to ask how we are doing in 1996 with activities in support of the membership. I will outline activities carried out in 1996 and ask you to rate them on a scale of 1 (best) to 5 (poorest).

National Chemistry Week	___	Chemistry for Kids	___
Chemistry Olympiad	___	Student Awards	___
Project SEED (student support)	___	Video Library	___
The Chesapeake Chemist	___	Special Awards	___
Science Fairs (Towson & Morgan)	___	Retired Chemists	___
Monthly dinner/lecture Meetings	___	Other (specify)	___
(How many did you attend?)			

As we plan for 1997, the information you provide will be very helpful. Your written comments are welcome for new activities or for activities we may be neglecting. I thank you for your support and look forward to your feedback.

Truly,

Shirish K. Shah

The Chesapeake Chemist is published monthly September through May by the Maryland Section of the American Chemical Society. Address editorial comments to the Editor. Send advertising copy and inquiries to the Business Manager. The Maryland Section is not responsible for opinions expressed herein. Editorials express the opinions only of their authors. The Editor is responsible for all unsigned material.

JOSEPH A. DOMANICO

Joseph A. Domanico is currently the Chief of the Pyrotechnics Team, Edgewood Research Development and Engineering Center at the Edgewood Area of Aberdeen Proving Ground, Maryland. He has devoted an excess of 25 years in the magical field of military pyrotechnics and commercial fireworks. This passion for the science of chemistry and the art of pyrotechnics recently resulted in being chosen as one of the top 10 employees with the Army Material Command (AMC). After his graduation with a B.S. in Chemistry from the University of Scranton, Pennsylvania in 1974, he entered military service as a second lieutenant in the U.S. Army stationed at the Edgewood Area of Aberdeen Proving Ground, Maryland. (Rumor has it that he still has the same old wooden desk he was issued in 1974.) Mr. Domanico's daily routine is quite varied, including tasks such as managing CBDCOM's Pyrotechnics Team, presenting technical papers at international conferences, performing personal research in the field of pyrotechnics, and acting as CBDCOM's technical expert for the National Fire Protection Agency's Pyrotechnics Committee, International Pyrotechnics Society, Pyrotechnics Guild International, and as the Chairman of the Pyrotechnics and Explosives Application Section of the American Defense Preparedness Association. As a Major in the Maryland Army National Guard, he leads the Training Management Assistance Team, a TQL initiative. Evenings allow some free time to pursue his many hobbies which include SCUBA diving, flying remote control aircraft, and managing the Sebring/Cimbria Kit Car Club, a national collection of individuals who have designed and built their own automobiles.

WHAT IS IT REALLY? CHEM-TECHNICS OR PYRO-ISTRY?

The relationship between chemistry and pyrotechnics varies between "cut and dry" in the pursuit of military pyrotechnics, to a nebulous gray area between laboratory chemistry and the basement pyrotechnician. While chemistry can exist without pyrotechnics, it is undeniable that pyrotechnics cannot exist without chemistry. From the professional laboratory chemist to the die-hard basement "bomber" mixing fireworks in his garage or basement, individuals who pursue this field of interest are passionate, skilled, devoted, humorous, and fiercely tribal. By starting with specific elements and combining them into various compounds, pyrotechnic compositions, experimental designs, and ending with the design and functioning of specific fireworks, we will follow the path from pure chemistry to the magic of color in the sky. We'll look at the passion of some individuals in this amazing spinoff in the broad field of chemistry, and trace the roots of several amazing firework devices back to their roots in the chemical laboratory. We will capture the dedication and strange sense of humor of the true "pyrotechnician", and conclude this talk with a better appreciation of those individuals and their personal efforts to "paint the sky".

1997 POLYMER TEACHING AWARD

The Polymer Education Committee announces the Award for Excellence in Polymer Education by a High School or Junior High School Teacher. The award recognizes teachers for their efforts to incorporate polymers in the curriculum and consists of a cash prize, teaching materials and a travel grant to attend conferences.

For an application for the 1997 competition please contact David M. Collard, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, Georgia 30332.

The closing date for receipt of applications is April 1, 1997. The award is supported by a grant from the Dow Chemical Company Foundation, Inc.

NOVEMBER MEETING

DATE & PLACE

Wednesday, November 20, 1996
Top of the Bay
(Former Officers' Club)
Aberdeen Area
Aberdeen Proving Ground
(NOT the Edgewood Area)

Dinner reservations should be made by mailing checks, payable to Maryland Section of ACS, to

Dr. Shirish Shah
College of Notre Dame
4701 North Charles Street
Baltimore, MD 21210

SCHEDULE:

6:00 Social Hour
(Cash Bar)

7:00 Dinner

8:30 Joseph A. Domanico
ERDEC
"Which Is It Really?"
Chem-technics or
Pyro-istry?"

by November 13. Late reservations may be made by calling

(410) 532-5712

by November 15; answering machine is available at this number.

Dinner price is \$19.00 per person, but spouses and retired chemists may attend for \$17.00; students may attend for \$9.50.

It is not necessary to be a member of the American Chemical Society to attend. You may attend the lecture without attending the dinner.

Dinner buffet: garden salad, roast sirloin of beef au jus, seafood newburg, rice, baked potato, green beans almondine, buttered corn, dessert, coffee.

Directions: From I-95 north take Exit 85 (2 miles north of the Maryland House Restaurant). Follow signs for Aberdeen Proving Ground and Route 22 east (this will be a right turn off Exit 85, but not the immediate first right). Route 22 east leads directly to the APG gate (about 4 miles); past the post gate house, it becomes Harford Boulevard. At the third light after the gate house, turn right (a sign indicates Main Post to the right); this road is Maryland Boulevard. At the next traffic light make a left turn onto Aberdeen Boulevard; follow this for 1.6 miles to a fork in the road (fire house location). Take the left fork in front of the fire house. The road will pass the Civilian Personnel Building on the right and come to a small traffic circle. Turn left at the circle onto Plumb Point Loop East. The Top of the Bay is 0.5 miles down the road. There is a parking lot in front of the building.

EAS LUNCH-TIME COLLOQUIA
ALVIN BOBER, CHAIR

In 1995 the Eastern Analytical Symposium offered a trial series of two lunch-time colloquia, both of which focused on aspects of the then-current trial of O.J. Simpson. The popularity of the 1995 program has resulted in an expanded schedule in 1996.

The 1996 EAS will feature 4 lunch-time colloquia. Dr. Rosalyn Yalow will make her second appearance before an EAS audience; she spoke at the 15th EAS when she received the Anachem Award prior to her receipt of the Nobel Prize for her discovery of radioimmunoassay. The other speakers are Mr. Arvin Smith, President and CEO of Thermo Instrument Systems, Inc. who will speak about the future of analytical instrumentation; Dr. Sidney Mintz, an anthropologist who specialized in food; and Dr. Joseph Madden of the US FDA, who will help decide if it is safe to each lunch!

The 1996 EAS will be held November 17-22 at the Garden State Convention Center and the Doubletree Hotel in Somerset, New Jersey.

Know Your Institutions of Higher Education and Research*

U. S. Army Edgewood Research Development and Engineering Center, Aberdeen Proving Ground, MD 21010**

Introduction

The Edgewood Research Development and Engineering Center (ERDEC) is under the Chemical Biological Command (CBDCOM). Research and Technology Directorate (RTD) is a part of the ERDEC and is the U.S. Army's leading laboratory charged with the responsibility of conducting research in biological and chemical defense, particularly in the areas of Reconnaissance, Detection and Identification; Individual and Collective Protection; Decontamination; Chemical Treaty Verification; and Smoke/Obscurants and Target Defeating Materials. It has a long and distinguished history of accomplishments in technological advances for national defense. Analytical Chemistry, Advanced Technology, Applied Science and Technology, Life Science, Threat Agent, Smoke and Obscurants, Biodetection, Modeling and Simulation, etc form an integral part of RTD. The forerunner of ERDEC was established on June 28, 1918, almost 78 years ago. The U.S. War Department created the Chemical Warfare Service, the predecessor organization of the U.S. Army Chemical Corps (AMC), to coordinate all chemical warfare (CW) functions. At the end of World War I (November 1918), Edgewood Arsenal came into being at Gunpowder Neck. Although several name changes have occurred since then, at the end of World War II the Center was credited with "providing the U.S. with a readiness and retaliatory capability that successfully deterred the use of CW agents against its soldiers by the enemy." Today, ERDEC is synonymous with the term, "Research for the Soldier" and conducts research in all areas affecting the performance, safety and well-being of the U.S. soldier on the battle field. Desert Storm and Desert Shield are two recent examples that adequately demonstrated the ability and contribution of ERDEC to this goal.

Research for the Soldier

Analytical Chemistry: This Analytical Chemistry Team (ACT) plays an important part in fulfilling the mission of ERDEC. Among other things, its responsibility includes the characterization of chemical materials using the present state of the art technology and methodology, examination of the basic chemical and physical phenomena directly applicable to decontamination, detoxification and demilitarization of CW and potential CW agents to assure the safety and survivability of the soldiers, building a science and technology base for detection and identification of CW agents in all matrices including our environment and providing analytical methods development and support to the Treaty Verification and Chemical Stockpile Demilitarization Programs. In this endeavor, the following instrumental techniques are being used:

Various mass spectrometers such as Atmospheric Pressure Chemical Ionization Tandem Quadrupole Mass Spectrometer, Electrospray Tandem Mass Spectrometer, Fourier Transform Mass Spectrometer, Gas Chromatography-Ion Trap Mass Spectrometer and Ion Mobility Spectrometry-Tandem Quadrupole MS are all available on-site at ERDEC. Electrospray Tandem Mass Spectrometry is superbly suited for the analysis of solid and liquid samples, particularly for the investigation and study of high molecular weight biological samples using atmospheric pressure ionization, electrospray and chemical ionization techniques. These can be coupled to thermobeam, direct insertion, high pressure liquid chromatographic (LC) and gas chromatographic (GC) inlet systems.

FT-Infrared spectrometers are available to perform vapor-, liquid-, and solid-phase spectra generation and matrix isolation (Argon/Xenon). Various microscopic techniques to conduct particulate sizing and Vibrational Circular Dichroism capability for measuring chiral activity are also available. Since nuclear magnetic resonance is an important instrumental technique for the structure elucidation of compounds, 200, 300 and 400 MHz systems are being used routinely. Two instruments are used in solid state NMR studies. Feedstock bioreactors are employed to investigate the fate of CW agents in the ecology. LC includes capillary ion electrophoresis, ion and reversed-phase chromatographic capability. Inductively coupled plasma and atomic absorption spectrometers are employed to carry out elemental analysis. Development of rapid but accurate screening and detection methodology has served as the basis for detector kits like the M256.

Threat Agent Team: This Team's task is to conduct research in organic, medicinal and theoretical chemistry, to evaluate known and potential threat agents, to discover bioactive compounds for less than lethal programs and to develop simulants for treaty application programs. Molecular modeling and computational chemistry methods are being applied to explore and understand chemical and biological interactions and reactions. These activities have led to the development of a Molecular Modeling Package (MMADS) which is being used on 80 academic, industrial and government sites.

Life Sciences: The primary mission of this area is to develop a pharmacological, toxicological and environmental data base in animal and alternative models such as Computer Assisted Sperm Motility Analysis to aid in defining the health hazards of military chemicals and biologicals to the soldier. Currently, a new facility known as the McNamara Life Sciences Laboratory for Toxicology and Biotechnology is under construction. Research in this complex, the only facility within the Army Material Command accredited to conduct chemical agent testing in animals, will be primarily devoted to defining chemical hazards to humans and our environment.

ERDEC's Advanced Technology and Applied Technology groups have recently created the first model of Biological Integrated Detection System, the Advanced Deployable Collective Protection Equipment, Light Weight Standoff Chemical Agent Detector, Passive Imaging Chemical Sensor and Multispectral Large Area Smoke System. In the words of Dr. John M. Ferriter, Director, RTD, "the ERDEC is poised for future and ready to continue leading-edge technical work to accomplish its mission".

***With a view to acquaint the members with colleges, universities and research centers located in the geographical region of the Maryland Section of the ACS, the Chesapeake Chemist will be periodically publishing short articles under this caption. Those interested in writing articles on this topic are asked to contact: S. Munavalli, 700 Paige Circle, Bel Air, MD 21014, Tel: 410-838-7565 (H), 410-671-2819 (O), FAX:410-671-3218.**

**** Mike Ellzy and Pete Snyder, both of ERDEC, have contributed to this article.**

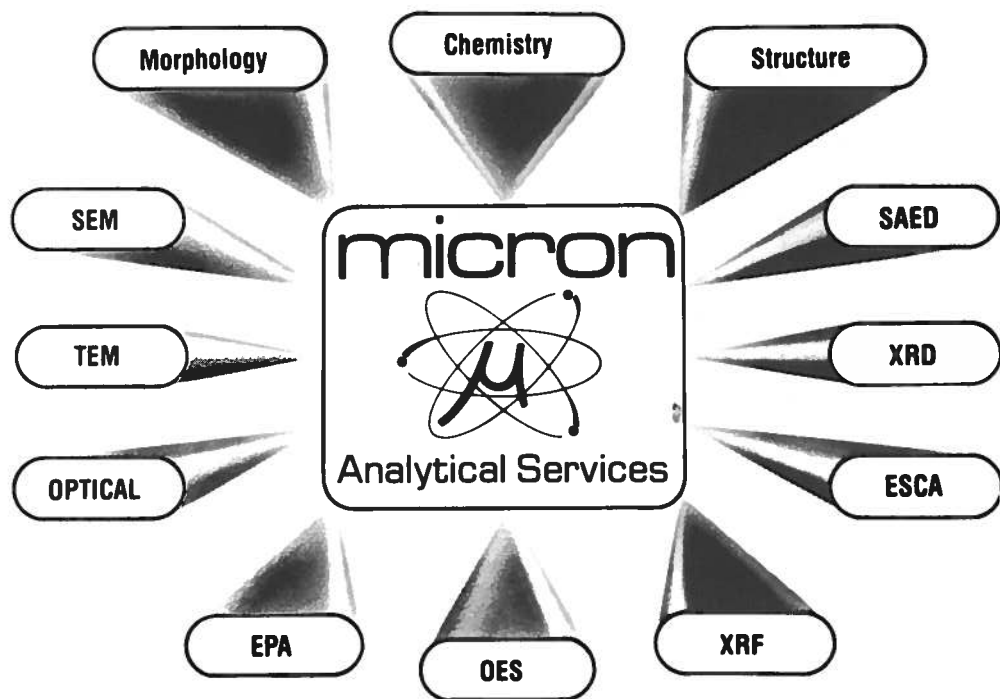
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PROCLAMATION

Governor Parris N. Glendening proclaimed August 27, 1996 as AMERICAN CHEMICAL SOCIETY - MARYLAND SECTION DAY in Maryland. The Governor noted, among other things, that the positive image of chemistry and of chemists is built upon and sustained by the personal activities of ACS members, and he congratulated the Maryland Section for being honored nationally for its 1996 ACS Most Outstanding Performance Award.

E-MAIL ADDRESSES

Members who wish to be included on the Section e-mail address list to receive notification about events and Society matters should send their e-mail addresses to Diane Schmit at DMS@VM.CFSAN.FDA.GOV. Put "ACS e-mail list" in the subject line.