



THE

CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

VOL. LIII

DECEMBER, 1997

NUMBER 9



THE MARYLAND CHEMIST OF THE YEAR

MARYLAND CHEMIST AWARD

1997

Presented to

Dr. Wu-Cheng Cheng

In recognition for being a dedicated and superb researcher; in recognition of having had a very large international industrial and economic impact; in recognition of being an enthusiastic and exceptional leader, role model, and colleague; and furthermore, in grateful acknowledgment of high standards evinced for all who aspire to excellence in science and in achievement in life.

Awarded this 10th day of December 1997, with the esteem of his fellow scientists and the affection of his colleagues and associates.

A Brief History of Grace Davison

by Elwin C. Penski

Grace Davison has deep roots in Maryland and a very distinguished history. In the 1820s William Davison, a Scotch-Irishman, settled in Baltimore. An early sign read "Davison, Kettlewell, & Co.: Grinders and Acidulators of Old Bones and Oyster Shells." Ground bones were then used as fertilizers and for other purposes. In 1832, William Davison built the first sulfuric acid chamber in the United States. Later he made calomel, quinine, Epsom salts, and white lead. William Davison had seven sons. In 1902 Calvin T. Davison formed Davison Chemical Company of Baltimore County. The Davison sulfuric acid plants were located in Canton and Hawkins point until 1908 when the present Curtis Bay location was constructed. To help protect American soldiers from German poison gases during World War I, Davison worked with John Hopkins University to produce silica gel. Later it was produced as a drying agent.

During World War II, fuels and oils were vital and severely rationed commodities. In the middle of the war, Davison created the world's first commercial fluid cracking catalyst at Curtis Bay. This catalyst was used, a few weeks later, in the world's first fluid cracking catalyst unit located in Baton Rouge. In 1953, Davison was purchased by W. R. Grace & Company.

W. R. Grace & Company was set up in 1854 in Peru by an Irishman, William Russell Grace. It was set up to ship guano from Peru to San Francisco. W. R. Grace & Company later imported tin, nitrates, sugar and other commodities. Peter Grace took over the Company in 1945 and diversified it. By 1982 the Company was the 5-th largest U.S. chemical company and a world leader in chemical specialties.

The following are the sources of most of the information for this brief history:

1. Haynes, W. American Chemical Industry, A History, D. Van Nostrand Company, Inc., New York, NY, p94, 1954.
2. Aftalion, F., A History of the International Chemical Industry, Univ. of Pennsylvania Press, Philadelphia, p260, 1991.
3. Grace Davison literature titled "History of Grace Davison," 1997.



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Wu-Cheng Cheng received B.S. and M.S. degrees in chemical engineering from the Massachusetts Institute of Technology in 1979. He received his Ph.D. in chemical engineering from Stanford University, under Prof. Michel Boudart. In 1983 Dr. Cheng joined the Research Division of W. R. Grace, where he worked in hydroprocessing and in RANEY catalyst development. In 1988 he transferred to Grace Davison, beginning in the Fluid Catalytic Cracking Catalyst Research Group. His research interests include synthesis and characterization of cracking catalysts, zeolite catalysis, catalyst deactivation, alumina chemistry and catalyst forming. He has co-authored nineteen patents and twenty-five publications. He is a member of ACS and AIChE.

ENVIRONMENTAL FLUID CATALYTIC CRACKING TECHNOLOGY

The Fluid Catalytic Cracking (FCC) process converts heavy oil into valuable gasoline and distillate fuel products and petrochemical feedstocks. The FCC process consists of a riser reactor and a regenerator. The riser cracks the feed into lower molecular weight products. The regenerator burns off coke deposited on the catalyst during the cracking reaction. Process emissions are mainly associated with regenerator exhaust. Typical pollutant concentration ranges are 50 to 200 vppm NO_x, 300 to 600 vppm for SO_x and 0 to 5 v% for CO. Pollutants produced in the riser include H₂S, NH₃ and light hydrocarbons. A major concern is that about 5% of the sulfur in the feedstock ends up in the gasoline. FCC gasoline accounts for about 90% of total gasoline sulfur. Environmental regulations are a key driving force for reducing FCC process air pollutant emissions and for changing the composition of fuel products. Environmental considerations are affecting the design and operation of FCC and are providing opportunities for development of in-process additives. Developments in these technologies will be reviewed.



Shekar Munavalli receives the 1996 Maryland Chemist Award, presented by Shirish Shah with the aid of Mrs. Munavalli

MARM 2000 @ TOWSON WEBPAGE

For the latest information about MARM 2000 go to
<http://www.towson.edu/chemistry/marm.htm>.

DECEMBER MEETING

DATE & PLACE:

Wednesday, December 10, 1997
 University of Maryland
 Baltimore County
 Library Tower - 7th Floor

Dinner reservations may 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

by December 3. Late reservations may be made by calling

7:00 Dinner

(410) 532-5712

8:30 THE MARYLAND CHEMIST
 AWARD ADDRESS

by December 5. Answering machine is available at this number.

Wu-Cheng Cheng
 Grace Davison
 "Environmental Fluid Catalytic
 Cracking Technology"

Dinner price is \$19.00 per person, but spouses and retired members 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.

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 field 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 Maryland Chemist Award. Recommendations of Awards Committees must be approved by the Section officers. The applicable section of Bylaw VIII is quoted as follows:

"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 have been:


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

Dear Dr. Shah,

In October, 1995, a group of 35 high school chemistry teachers met at the Maryland Science Center for the purpose of forming a support group that would provide opportunities for collaboration which had as its goal the improvement of the chemistry education of our students. Now known as the Chemistry Educators of Maryland (ChEMd), this organization of 80 members has held workshops and discussion groups on topics from using technology in the classroom to nuclear chemistry to issues in Advanced Placement Chemistry. As we have grown, many of our members have acknowledged the importance of our becoming part of the professional community of chemists in Maryland. To that end, we respectfully request that the Maryland Section of the American Chemical Society give consideration to allowing the Chemistry Educators of Maryland to become an affiliated organization, granting our members the benefits of being part of the local section.

Affiliating ChEMd would continue the strong commitment to science education that the Maryland section has long demonstrated. It would expand the network of chemistry professionals to include teachers in the K-12 community as well as establish connections to the next generation of chemists, our students. For members of ChEMd, affiliation with the American Chemical Society would provide new resources and promote technical growth through participation in local section activities.

Thank you very much for the opportunity to make this proposal to the Maryland Section of the American Society. We look forward to hearing from you soon.

Sincerely,

Kathleen Thompson
for the Chemistry Educators of Maryland

FROM THE CHAIR:

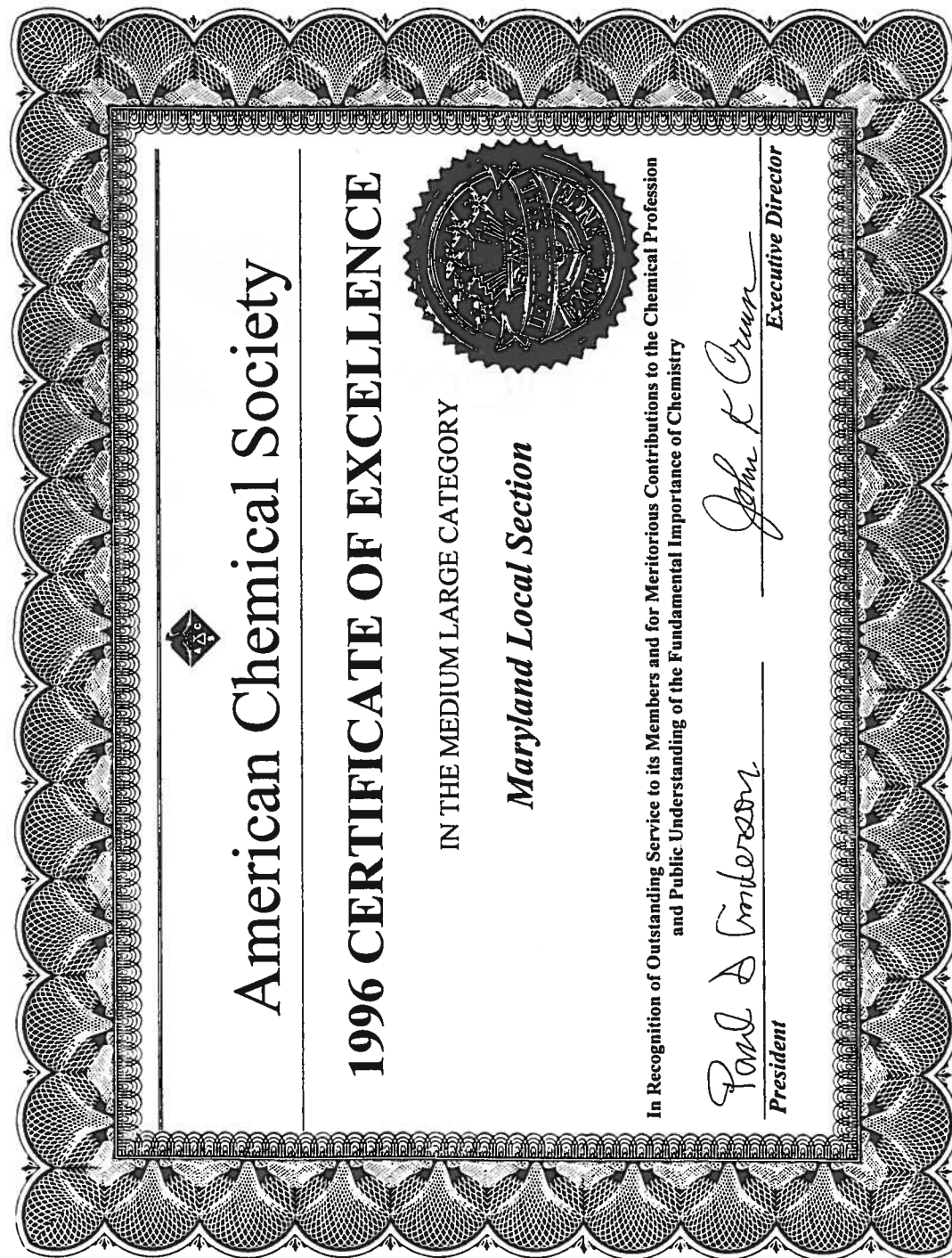
The Executive Committee on September 17 considered favorably the above request for affiliation received from the Chemistry Educators of Maryland. An addition to the Section's By-laws is necessary to permit such an affiliation. At our December 10 meeting members will be asked to approve the proposed addition to the By-laws.

PROPOSED NEW BY-LAW:

The Maryland Section may affiliate with other technical and professional organizations that enhance its ability to pursue the OBJECTS of the SOCIETY providing such affiliations:

1. Do not make the Section responsible for debts incurred by said organization,
2. Do not commit the Section to actions or positions of said organization,
3. Shall be approved by mail ballot of the Section's membership, and
4. Are approved by the Committee on Constitution and Bylaws acting for the Council of the SOCIETY.

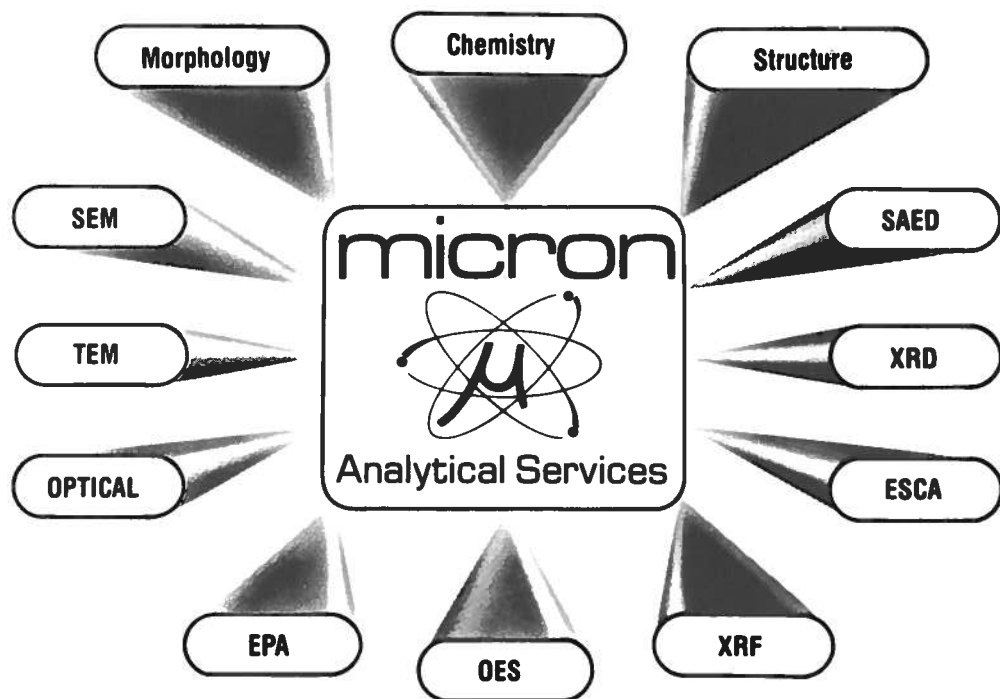
Affiliation shall permit business arrangements between the organizations if such arrangements meet the first two criteria and generally support the program goals of the Section.



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MISSION STATEMENT

Our goal is to bridge the gap between the industrial experience and the chemistry classroom by developing those lines of communication that will mutually satisfy the needs of both industry and education.

To implement this goal, we will bring together instructors in chemistry from the secondary schools, two and four year colleges and universities with interested members of the local industrial chemical community.

Our aim is to enhance the quality and availability of chemical education to all students, foster career opportunities and improve the perception and productivity of the chemical industry.

EDITOR'S NOTE: Above is the mission statement of the Chemistry Alliance of Maryland, a group which has been very active in our National Chemistry Week activities, especially in coordinating the Chemical Bonding Day activity.