THE CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

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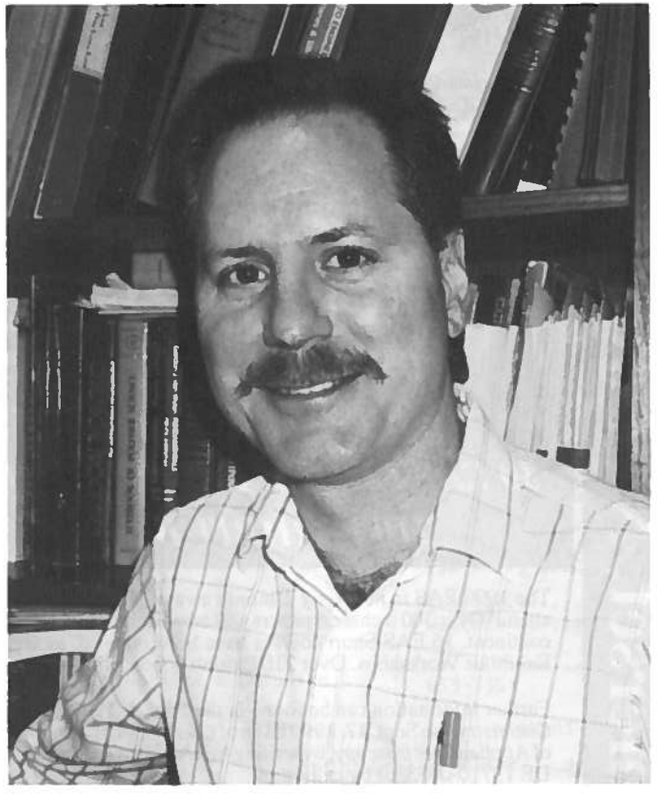

MARK A. McHUGH

THE CHESAPEAKE CHEMIST

VOL. XLVI **OCTOBER, 1990** **NUMBER 7**

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SUPERCRITICAL FLUID EXTRACTION: FACT AND FICTION

Although the unique physico-chemical characteristics of supercritical fluids can be exploited when processing monomers, polymers, natural chemicals, and other "difficult-to-process materials", these solvents do not offer a panacea for all separation problems. A brief overview will be given which traces the origins of supercritical fluids and fluid processing from the early 1800's to the present. The fundamental principles which govern the processing at high pressures will be presented along with examples which highlight the potential of supercritical fluid processing. The experimental techniques used in our laboratories for obtaining information on solvent systems at high pressures will be briefly described along with a short critique of the methods used for calculating the phase behavior of these systems.

Mark A. McHugh

Mark A. McHugh, an associate professor in the Department of Chemical Engineering at The Johns Hopkins University, has conducted research in the area of high-pressure phase equilibria, including extensive studies on polymer-SCF mixtures and hydrocarbon solid-SCF mixtures. He has also investigated the effect of a supercritical fluid reaction medium on free radical reaction behavior. Dr. McHugh has incorporated video techniques with his high-pressure equipment to visualize and record phase and chemical reaction behavior, and he is currently investigating dielectric and conductivity behavior in the critical region. McHugh has published over 25 research papers and is the coauthor of the only text book in this area: *Supercritical Fluid Extraction: Principles and Practice*. Prior to joining the faculty at Johns Hopkins, Dr. McHugh spent four and a half years as a faculty member in the Department of Chemical Engineering at the University of Notre Dame.

PER ON CIS

The PressNet Environmental Reports database (PER) is now available on the Chemical Information System (The CIS). PER summarizes articles on environmental issues that have appeared in newspapers around North America, concentrating on state and local action in order to make the database a supplement to the national and international environmental coverage that is already readily available to everyone. More than 4,000 articles on state and local environmental issues and actions were referenced in the database at its initial appearance on The CIS; more will be added in weekly updates.

An individual interested in searching PER can input any word or phrase -- RECYCLING, for example, or DRINKING WATER -- and retrieve from the database all those records that contain the word/phrase. Retrievals can also be limited by date, by locality, and by a variety of other parameters.

PER is extracted from PressNet, the daily electronic news service operated by PressNet Systems, Inc., 400 E. Pratt Street, Baltimore, MD 21202. PressNet provides a variety of information packages for business, industry, and government. For further information on any PressNet product, call 800-666-3236.

For more information on PER or The CIS, contact CIS, 7215 York Road, Baltimore, MD 21212, 301-321-8440.

OCTOBER MEETING

DATE & PLACE:

Wednesday, October 17, 1990
W. R. Grace Research Center

SCHEDULE:

6:00 pm Social Hour
7:00 pm Dinner
8:00 pm Lecture

SPEAKER & TOPIC:

Mark A. McHugh
Johns Hopkins University
"Supercritical Fluid Extraction: Fact and Fiction"

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

Ms. Menyan Cheng
Nova Pharmaceutical Corp.
6200 Freeport Center
Baltimore, MD 21224

by October 10. Late reservations may be made by calling (301) 563-6167 by October 12. An answering machine is available at this number.

Dinner price is $14.00 per person, but spouses, retired chemists and students may attend for $12.00

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

DIRECTIONS:

From I-95 take Route 32 west for about five miles (this takes you past Route 29). At second traffic light (flashing yellow after 6:00 pm) turn right into Grace driveway. After stopping at guardhouse, park in front of building 1 (first building on right) or on far side of building 25 (second building on right). Meeting will be in building 1.

ASSOCIATE EDITOR FOR ANALYTICAL CHEMISTRY

Catherine Fenselau of UMBC has been chosen to be associate editor of Analytical Chemistry for Mass Spectrometry. She replaces Klaus Bieman of MIT, who had been an associate editor since 1985.

OSHA LAB RULES

Professional Analytical and Consulting Services, Inc. (PACS) is providing a manual which describes the new OSHA lab rules and how to comply with them. Compliance is required in January of 1991 for U.S. labs. Final rules were published in the January 1990 *Federal Register* as OSHA standard 29 CFR 1910.1450. PACS is providing several one-day public session training courses and on-site courses to aid timely compliance with the new OSHA regulations. The rules are designed to protect laboratory workers for overexposure to toxic substances. For more information, contact Dr. Henry Nowicki, PACS Inc., 409 Meade Drive, Coraopolis, PA 15108, (412) 457-6576.

GUSTAVUS JOHN ESSELEN AWARD FOR CHEMISTRY IN THE PUBLIC INTEREST

The Gustavus John Esselen Award for Chemistry in the Public Interest was established by the Northeastern Section of the American Chemical Society in 1985. The award annually recognizes a chemist whose scientific and technical work has contributed to the public well-being, and has thereby communicated positive values of the chemical profession. The significance of this work shall have become apparent to the public within the five years preceding nomination, and the Awardee shall be a living resident of the United States or Canada at the time of nomination. Awardees have generally been individuals who deserve greater public recognition for their accomplishments.

The prize will be a bronze medal and a check for $5,000. Travel expenses incidental to the confering of this award will be reimbursed. The award will usually be given at the April meeting of the Northeastern Section at Harvard University in Cambridge, Massachusetts. At the award ceremony biographical notes on the life of Dr. Esselen and a description of the Awardee's life and accomplishments will be presented. The Awardee will deliver an address on the subject of the work for which the honor is being conferred, or for work in progress which is also directed to chemistry in the public interest.

The person who nominates a candidate is requested to provide seven copies of 1) a biography of the candidate, 2) a description of their public contribution and its importance, 3) copies of pertinent news articles and technical papers, and 4) the names of three co-sponsors. Please send nominations and inquiries for further information to: Chair, Esselen Award Committee, c/o Northeastern Section, American Chemical Society, 19 Mill Road, Harvard, MA 01451, Telephone (508) 456-8227. Nominations should be postmarked no later than December 1. Joint nominations are acceptable. The Committee will review the nominations and the award recipient will be notified by the first of February. The Committee reserves the right to declare that no candidate meets its standards, and that no award will be given.

PARSONS AWARD TO MARY GOOD

The ACS Board of Directors has selected Mary Good as the 1991 recipient of the Society's Charles Lathrop Parsons Award - the award designed to recognize outstanding public service by an ACS member. Mary Good is the first woman to receive this honor.

FUTURE MEETINGS

Date	Location	Speaker	Affiliation	Topic
Nov 14	Aberdeen	Norman Ness	Univ. of Delaware	Voyager Missions
Dec 19	UMBC	Maryland Chemist Award		
Feb 13	Notre Dame	Lynn Schnemeyer	Bell Laboratories	Superconductivity
Mar 13	Naval Academy	Keith Ward	Naval Research Laboratory	Protein Crystallography
Apr 17	West. Maryland	Student Awards		
May 15	Johns Hopkins	Remsen Award		

WASTE MANAGEMENT MANUAL

The ACS Department of Government Relations and Science Policy has released the *Waste Management Manual for Laboratory Personnel* developed by the ACS Task Force on RCRA. The manual provides a rich resource for laboratory bench chemists concerned about the proper disposal of wastes produced in the laboratory and can provide a good supplement to in-house industrial training. The *Waste Management Manual* emphasizes practical approaches to the management of hazardous waste in a laboratory setting, stressing the federal regulatory requirements and noting the need to consult state regulations and company policies before attempting to develop a waste management program.

Laboratory professionals, the "front line" generators of hazardous waste, are in a key position to determine whether a waste management program succeeds or fails. Laboratory personnel are uniquely qualified to contribute to the tasks of segregating and labeling wastes and properly accumulating the wastes. As a part of an overall waste management program, they need to understand both the relationship between the regulatory and organizational requirements and the commitment they must make for the program to succeed. This commitment includes considering all waste management options and minimization techniques when planning laboratory activities.

Industrial bench chemists receive an introduction to the concept of a waste management system and are led through an overview of the federal regulations governing waste disposal. Detailed information on hazardous wastes regulated by the federal government is provided in a separate section, to make referral easy. Complete lists of compounds that are hazardous wastes listed by EPA are provided.

The document describes how to develop a waste management system. Waste minimization, identification and labeling of wastes, proper use of normal trash and sanitary sewer, in-lab treatment of hazardous waste, and storage prior to shipment are described in clear terms. The *Waste Management Manual* also provides information on the role and authority of the waste manager, how to work with contractors, and recordkeeping requirements.

For the laboratory head, the manual presents effective methods for raising the awareness and commitment of laboratory workers. Suggestions are made for the education and training of personnel, personnel performance evaluations, and the personal responsibilities and liabilities of workers who generate hazardous waste.

Single copies of the manual are available free of charge (up to 10 for non-profit groups) from the ACS Department of Government Relations and Science Policy, 1155 Sixteenth Street, NW, Washington, DC 20036. Please include a self-addressed mailing label. For multiple copies, contact Ms. Robin Y. Lindsey, (202) 872-4386.

ESSELEN AWARD WINNERS

The Gustavus John Esselen Award has previously been made to: F. Sherwood Rowland and Mario J. Molina for the original research which demonstrated the effect of chlorofluorocarbons on the ozone layer of the upper atmosphere; Alfred P. Wolf and Joanna S. Fowler for developing chemical procedures to make positron emission tomography a practical method for medical diagnostic use; Carl Djerassi for synthesizing and establishing the widespread use of the first and still most common human birth control hormone; and to Thomas Dougherty for developing photodynamic therapy which is used as a highly localized and selective cancer treatment.

The importance of an Award dedicated to showing the positive values of chemistry to the public cannot be overstated during this period when there are so many negative reports in the media dealing with hazards and toxicity of chemicals.