



THE DAYTON SECTION

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BULLETIN**March-April, 1999**

Annual Dayton Section Poster Session

University of Dayton

Wednesday, March 10, 1999



"Corrosion and Its Control"

Patterson College Award Presentations

Cedarville College

Wednesday, April 14, 1999


AMERICAN CHEMICAL SOCIETY**Dayton Section**

Eugene W. Kettering Center
140 East Monument Avenue
Dayton, Ohio 45402-1267

NON-PROFIT ORG.**U. S. POSTAGE PAID****DAYTON, OHIO****PERMIT NO. 517****DATED MATERIAL -- MEETING ANNOUNCEMENT -- DO NOT DELAY**

Meetings...

March

- Date:** Wednesday, March 10, 1999
- Place:** Kennedy Union Ballroom
University of Dayton
- Agenda:** 6:30 PM — Social (Free pizza and soft drinks will be provided)
6:30 PM — Poster Displays
- Topic:** *"Annual Dayton Section Poster Session"*
- Abstracts:** Abstracts for the poster presentation are to be mailed to Dr. Glen Buell, 3548 Eastern Dr., Beavercreek, OH 45432, or email buell@flyernet.udayton.edu by close of business March 3, 1999.
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April

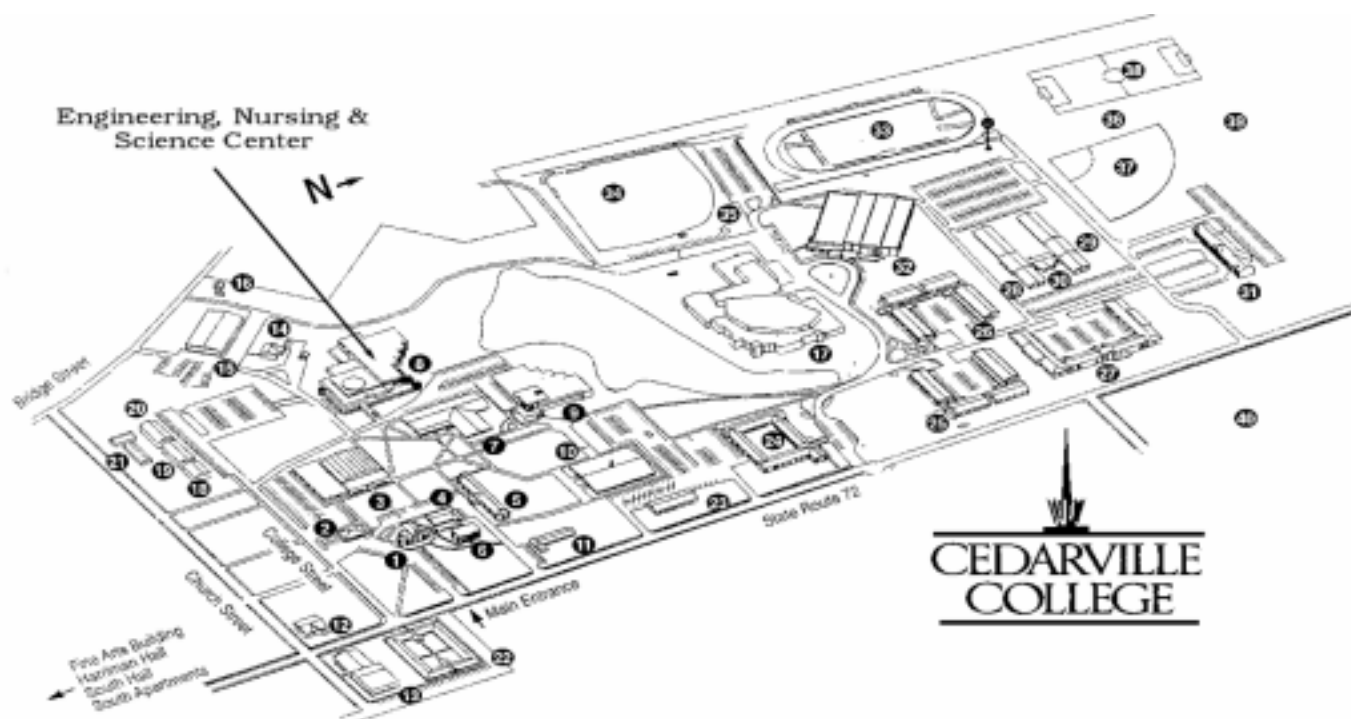
- Date:** Wednesday, April 14, 1999
- Place:** 345 Engineering, Nursing & Science Building (ENS)
Cedarville College (see map on page 3)
- Agenda:** 7:00 PM — Social
7:30 PM — Patterson College Chemistry Awards Presentation
8:00 PM — Speaker
- Speaker:** Dr. Norman Hackerman
Professor Emeritus, University of Texas
ACS National Tour Speaker
- Topic:** *"Corrosion and Its Control"*
- Abstract:** The loss to the US by corrosion of metals in industry, home, transportation, etc. has been estimated at \$70 billion per year (just about the same as is estimated for all R&D in the US this year). Understanding metal loss and the effects on structural integrity is both scientifically interesting and of practical utility. The mechanisms of inadvertent metal reaction and control of the rates are therefore of consequence.

Biographical Sketch:

Norman Hackerman served as President of Rice University for 1970–1985 and holds the title of President Emeritus and Distinguished Professor Emeritus of Chemistry at Rice University. Prior to coming to Rice, Dr. Hackerman spent 25 years at the University of Texas, Austin, Texas, where he joined the faculty as an Assistant Professor of Chemistry in 1945 and progressed to President in 1967. He is now the Professor Emeritus of Chemistry at the University of Texas at Austin. He received his A.B. and Ph.D. from Johns Hopkins University. He taught chemistry at Loyola College and Virginia Polytechnic and worked as a research chemist for Colloid Corp., Kellogg Corp. and the US Coast Guard. Dr. Hackerman was a member of the National Science Board (1968-80) and Chairman (1975-80). He has been the Editor of the Journal of the Electrochemical Society since 1969. He is a member of the National Academy of Sciences, the American Philosophical Society and the American Academy of Arts and Sciences and belongs to numerous scientific organizations. He is author or co-author of more than 200 publications. In addition to several previous awards, Dr. Hackerman received the American Institute of Chemist Gold Medal in 1978, the Mirabeau B. Lamar Award of the Assoc. of Texas Colleges and Universities in 1981, the Distinguished Alumnus Award from John Hopkins in 1982, Edward Goodrich Acheson Award of the Electrochemical Society in 1984. The Alumni Gold Medal for distinguished service to Rice University in 1984, the Charles Lathrop Parsons Award of the ACS in 1987, the AAS-Philip Hauge Abelson Prize in 1987 and the Vannevar Bush Award of the NSB in 1993. Dr. Hackerman serves as Chairman of the Scientific Advisory Board of the Robert A. Welch Foundation.

Directions to Cedarville

Take US 42 from Xenia to Cedarville. Turn left (north) on State Route 72. Go left on College Street. Turn right after parking lot. Engineering, Science & Nursing Center will be on the left (Bldg 8 on the map). Use the entrance nearest the lake. All parking lots are open lots in the evening. When coming from the north: Take SR 72 south to College Street and turn right.



International Chemistry Celebration

Dayton Section Shares in Global Salute Festivities

The Dayton section of the ACS is celebrating the march into the next millenium by participating in A Global Salute to Polymers as part of the International Chemistry Celebration (IChC, November 1998 - November 1999). The mission of the IChC is to enhance the public appreciation of chemistry and its positive contributions to everyday life throughout the world and to enhance communication among all chemical societies and organizations worldwide. One of the cornerstones of the IChC is A Global Salute to Polymers, an international recognition of the positive impact that polymers, both natural and synthetic, have on everyday life. The program also recognizes resulting novel technologies, notable researchers, and significant landmark sites where the polymers were invented or developed. A Global Salute to Polymers is therefore also supported by the Advisory Committee for the American Chemical Society National Historic Chemical Landmarks Program.

The Dayton Section is commemorating the invention and development of rigid-rod aromatic-heterocyclic polymer technology at the Polymer Branch of the Materials & Manufacturing Directorate, Air Force Research Laboratory (AFRL/ML) at Wright-Patterson Air Force Base. The Section is also honoring the commercialization of the technology, initially performed by The Dow Chemical Company and finally by Toyobo Co. Ltd., Osaka, Japan. The center of attention of our Global Salute is the rigid-rod polymer that made it to commercial scale, namely poly(benzo[1,2-d:4,5-d']bisoazole-2,6-diyl-1,4-phenylene), or PBO [CARN 107028-47-7].

With its sibling polymers, PBT and PBI (Hoechst Celanese), which are the thiazole and imidazole analogues of PBO, respectively, the PBXs are a family of polymers known for their high thermooxidative stability, flame resistance, abrasion resistance, and very good ultimate tensile mechanical properties. Their origin lies in the seminal work published by Carl S. "Speed" Marvel in the early 1960's with the preparation of fused ring polybenzimidazole and benzbisimidazole polymers from dicarboxylic acid derivatives and tetrafunctional aromatic amines, such as 3,3',4,4'-tetraaminobiphenyl (Vogel and Marvel, J. Polym. Sci. 1961 50 511). Optimization of the synthesis and the materials processing technology of the polymers continued for twenty years through in-house research and external development contracts at the Polymer Branch before the polymers were ready for advanced development technical efforts to scale-up and fabricate reproducible polymer products. The Dow Chemical Company was one of the external R&D participants in that work during the 1980's and early 1990's to build pilot plant capabilities and produce sufficient polymer with consistent properties so that a wide array of product applications requiring the necessary physical characteristics could be considered. In the early 1990's Dow partnered with Toyobo Co., Ltd., historically one of the largest suppliers of high performance polymeric fiber products in the Pacific Basin, to bring PBO to the consideration of Far East and world customers. Toyobo Co., Ltd., has since proven the utility of PBO fiber in many product forms as evidenced by examination of the open literature and the company's web page for PBO (<http://www.toyobo.jp/e/seihin/kc/pbo/index.htm>). PBO is now known commercially as Zylon and a virtual tour of some of Toyobo's accomplishments with Zylon in a mere 5 years may be found on the web site.

Events planned for the Global Salute include an educational and informational display at the March Dayton Section Poster Session. Participants will note the significant historical events, some of the R&D test articles, and the general chemistry relating to the family of PBX polymers. A Global Salute to Polymers symposium (sponsored jointly by the Divisions of History and Polymer Chemistry) will be held at the ACS spring meeting in Anaheim. At this symposium, Polymer Branch researchers Marilyn Unroe and Robert Evers will present a talk after which former ACS President and current Director of Regional II, Helen Free, will award commemorative site plaques to AFRL/ML, Dow and Toyobo. For those section members who can not make it to the March meeting, you will have another chance to view the display at the Central Regional Meeting in Columbus, OH in June 1999. The display will then travel to the Midland, MI local section for their use during the rest of the summer. **(continued on back page)**

Commentary

Worth the Dues?

A Commentary by Steve Trohalaki, Alternate Councilor and Public Relations Chair

In the previous edition of the Dayton Section Bulletin, Ken Turnbull addressed the concerns of a few Dayton Section members who expressed their views of our last election. One member also complained that what he/she gets out of membership in the Dayton Section is hardly worth the dues. Although some may feel that the \$100 per year for membership in ACS is high, what most Dayton Section members do not know is that the section gets only \$10 from this amount. We are a medium-size section with approximately 550 members, so we get a yearly allotment from the ACS of about \$5500. The Section receives another \$1500 from voluntary dues bringing the yearly total to about \$7000. However, our local section expenses for section meetings, bulletin publication, career programs, educational outreach, academic awards, etc are approximately \$11,000. Fortunately, local industry funds some of our National Chemistry Week Events and our section has long benefited from philanthropists who have funded academic awards. We've been able to expand these awards through judicious investment of the original funds. Nevertheless, it is *on behalf of our members* that we administer and present these prizes and scholarships.

Academic awards administered by the Dayton Section include \$1750 in cash prizes and about 15 plaques to winners of the Patterson High School Chemistry Competition. Outstanding chemistry majors in their junior year enrolled in local colleges and universities each receive Patterson College Awards, consisting of a citation and \$300. The Section also provides \$350 in savings bonds to winners of the West District Science Fair. Together with the Columbus Section, we present the Patterson-Crane Award (\$2000 honorarium plus meeting expenses), which was established in 1949 by the Dayton Section to acknowledge an internationally known researcher's meritorious contributions to chemical literature and documentation of chemistry.

As part of educational outreach and at a cost of about \$4000, the Dayton Section sponsors National Chemistry Week events such as SlimeFest at the Mall at Fairfield Commons, John Fortman's Chem Demo show at WSU, and ChemFest at the Dayton Museum of Discovery. The Dayton Section won a Phoenix Award from the ACS in 1996 for these events. Our National Chemistry Week activities are outstanding and merit more Dayton-Section membership participation.

Why, you may ask, do we administer contests, award prizes, fund events, and invite speakers? The answers lie in the very reasons for the foundation of the ACS in 1876 and for its charter by a 1937 Act of the U.S. Congress: the ACS endeavors to foster scientific education and research and to promote public understanding of science. Towards these ends, we continue to strive for interesting local section meetings but we can't do it alone. We need your attendance, suggestions about potential speakers, and ideas on what you want out of Section membership. If you have ideas of how we can better achieve these goals, please contact any of the Board members listed on the Bulletin masthead. Better yet, attend our next section or board meeting and tell us in person.

Annual Poster Session

The annual Dayton Section Poster Session will take place on Wednesday, March 10th in the Kennedy Ballroom at the University of Dayton from 6-9pm. You, your colleagues and students are invited to participate by presenting a poster relating to any area of chemical research. To be eligible to apply for a Dayton Section travel grant (up to \$300 / group for attendance at an ACS national meeting), ACS student affiliate groups must have at least one member present a poster at this meeting. Abstracts of 200 words or less should be sent to Glen Buell, 3548 Eastern Dr., Beavercreek, OH 45435, by, or before, March 3rd. Poster set-up time will be from 6-6.30pm and free pizza and soft drinks will be available from 6.30pm.

Patterson Chemistry Competition

On Saturday, January 30, 85 students from 12 different high schools participated in the Patterson High School Chemistry Competition at Sinclair Community College. The 11 semi finalists listed below and will be asked to submit an essay on "Chemistry and Its Relevance to Me" for a scholarship award. These winners will be announced at the June Dayton Section meeting. The Dayton Section would like to thank Berch Carpenter, and all those who helped him, to again organize this successful event.

From Beavercreek: Maneesh Gupta, Michael Luther, Emil Martinsek & Christy Renz

From Bellbrook: Aaron Modic

From Centerville: David Buckles, Rob Herrick, Benazeer Noorani, Jeremy Olson & Ben Przybyla

From Fairborn: Chris Mahoney

Congratulations!

Musings from the Chair

It is time again to post another Bulletin for the membership. Since the last publication, the Section Officers and Committee persons have been busy completing the annual report and planning for the coming year. We need more of your input for the planning to be effective so why not use the masthead and contact an officer or committee person. Dr. Turnbull is editing the annual report and it looks great.


I am sorry that the announcement for the January meeting (joint with AICHE) was confirmed only after the January-February Bulletin was published. Some of you probably missed a tour of the Lord Corporation on Wadsworth Ave. I apologize for that and will take the blame. The dinner meeting at Neils, subsidized mostly by the Dayton Section's treasury should be fun and educational. The March Meeting is the annual Poster Section and we are hoping for the same or more attendance than last year (60 + persons with 25 presenters). Here is the chance for the membership to exhibit their talents. Hope to see you there. On the masthead, is my email address and phone number with voice mail so you may contact me any time with ideas, suggestions, criticisms or other messages. If an answer is required, I will answer it and if not, these comments will be published in the Bulletin, without names of course, at a later date. Frank Lonadier Chair 1999.



Need Help in Your Career?

The Dayton Section offers assistance in career planning and searching for new positions. Contact Glen Buell (937) 426-2937.

Member-Services Available



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A permanent home for the display will be found at AFRL/ML. The final activity for the Global Salute will be the posting of a web page dedicated to PBX technology, which will reside either at the Dayton Section web site (<http://www.udayton.edu/~acs/>) or at the Materials & Manufacturing Directorate web site (<http://www.ml.wpafb.af.mil/>). Section members interested in a presentation of the Global Salute display at an appropriate event should contact either Steve Trohalaki at 937.255.6671.x3147 or Marilyn Unroe, AFRL/ML at 937.255.9145.