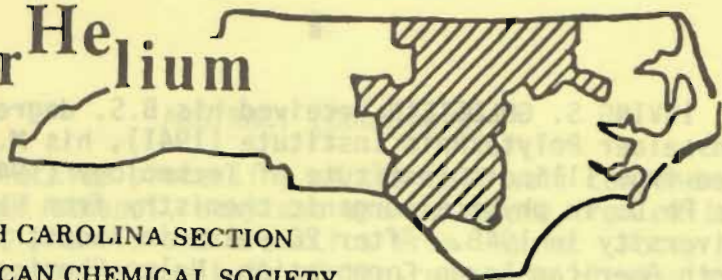


Tar Helium



NORTH CAROLINA SECTION
AMERICAN CHEMICAL SOCIETY

Vol. 13, No. 6

March, 1983

INDUSTRIAL ORGANIC CHEMICALS FROM BIOMASS

by

Dr. Irving S. Goldstein
Department of Wood and Paper Science
North Carolina State University

Date: Tuesday, March 15, 1983

Place: Performing Arts Center of
Pembroke State University*

Time: 5:15 p.m., Complimentary Cheese and
Wine-Tasting Social

6:15 p.m., Steak Dinner (\$8.00 for
members, \$4.00 for students)

7:15 p.m., Lecture

*Join us in this unique opportunity to visit a special area of the NC Section; rides will be provided, leaving at 3:00 p.m. For ride information and dinner reservations, please call one of the following by Friday, March 11. In Durham, call Louis Quin at 684-3010; in Chapel Hill, call Eric Bigham at 541-9090; and in Raleigh, call William Switzer at 737-2945 or Halbert Carmichael at 737-2949.

DR. IRVING S. GOLDSTEIN received his B.S. degree from Rensselaer Polytechnic Institute (1941), his M.S. degree from Illinois Institute of Technology (1944) and his Ph.D. in physical-organic chemistry from Harvard University in 1948. After 20 years in industry with North American Rayon Corporation, Nalco Chemical Company, Koppers Company, Inc. (as Manager of Wood Chemistry Research) and Continental Can Company, he was appointed Professor of Forest Science at Texas A & M University in 1968. Since 1971 he has been Professor of Wood and Paper Science at North Carolina State University, and served as Head of the Department from 1971 to 1978. His research has included treatment of wood for resistance to decay, insects and marine borers, chemicals, fire and dimensional changes; pulping, bleaching and papermaking; and the conversion of wood, lignin and bark into useful chemicals. He is the immediate Past-Chairman of the Cellulose, Paper and Textiles Division, ACS.

ABSTRACT

During the past decade the escalating cost of fossil hydrocarbons has raised concern about the future cost and availability of the petroleum and natural gas from which almost all our organic chemicals and the synthetic organic polymeric materials derived from them are now obtained. Attention has been given to alternative chemical feedstocks, principally coal, but also biomass, the precursor of all fossil fuels.

Chemicals from biomass can substitute for petrochemical feedstocks by direct utilization of natural polymers, by the use of conventional feedstocks derived from biomass, and by the use of unusual feedstock more conveniently derived from biomass. Entirely analogous to the processing of coal, biomass can be gasified to synthesis gas or pyrolyzed to charcoal and tars.

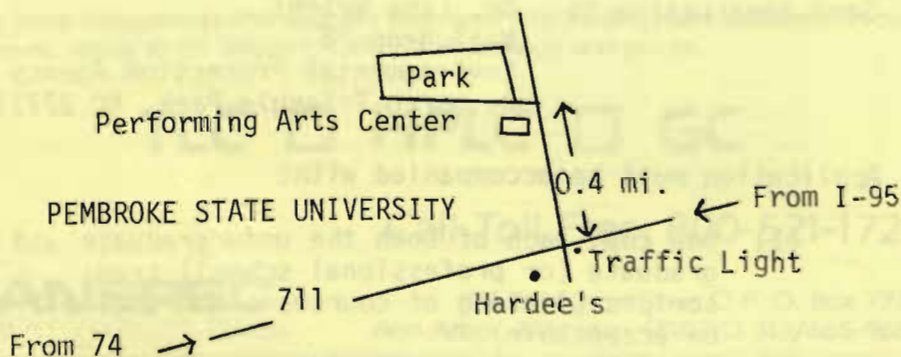
ABSTRACT (Continued)

Selective processing of the cell wall components can yield ethanol, ethylene and butadiene from cellulose and phenols and aromatics from lignin. Woody plants comprise the bulk of the renewable biomass material. It is technically feasible to meet our organic chemical and synthetic polymer needs from biomass, and sufficient annual growth occurs to provide a continuous supply. Economic feasibility, however, will depend on the future availability and cost of fossil fuels and political decisions.

DIRECTIONS TO PEMBROKE STATE UNIVERSITY:

From the north or south follow I-95 towards Lumberton. Exit Rt. 711 heading north. Follow it 0.4 miles to the fork, and continue on the left branch 9.4 miles farther. Turn right just before Hardee's to reach the Performing Arts Center (See map below).

From the west follow Rt. 74 east to the fork marked with a sign to Pembroke. Take the left branch, follow it for 2 miles to route 711, then follow 711 1.8 miles. Turn left just after Hardee's to reach the Performing Arts Center (See map below).



APPLY NOW FOR
CENTENNIAL SCHOLARSHIP AWARD

The North Carolina Section of the ACS announces its eighth annual CENTENNIAL SCHOLARSHIP AWARD for the summer of 1983. It carries a stipend of \$1000 (tax free). The Section no longer places any restriction on the award. Other support during the tenure of the award is allowed by the Section. However, the Section encourages applicants to follow any guidelines stipulated by his/her department or his/her research advisor.

Eligibility requirements:

- (1) Membership or Associate Membership in the American Chemical Society.
- (2) Attendance at a Graduate or Professional School within the geographic boundaries of the North Carolina Section of the ACS.
- (3) Successful completion of at least one year of graduate or professional study toward an advanced degree by the end of the academic year.

DEADLINE FOR RECEIPT OF APPLICATION IS MARCH 14, 1983

Send application to: Dr. Lynn Wright
Mail Drop 78
Environmental Protection Agency
Research Triangle Park, NC 27711

Application must be accompanied with:

- (1) One copy each of both the undergraduate and graduate (or professional school) transcripts (listing of courses and grades will be acceptable).
- (2) Two letters of recommendation: One from the research director and one from another graduate professor.

- (3) No more than a 1000 word written summary by the applicant of the research project, which must be in a chemically related area.
- (4) An outline of the portion of the work planned for the period of the award (summer, 1983).

The Scholarship will be awarded on the basis of excellence of academic record, superior performance as a teaching assistant (where applicable), and promise in research and quality of application. It will be given primarily on the basis of past performance, rather than the quality of the actual research proposed. The award, which is not subject to renewal, will be announced at the Meeting-in-Miniature on April 16, 1983. The recipient is expected to give a 5-minute presentation on this work at one of the fall meetings of the Section.

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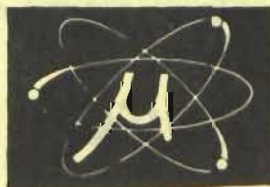
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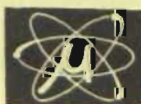
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For Further Information Contact
 J. F. Ficca
 302-998-1184.



1983 BUDGET APPROVED

A budget for 1983 presented to the Executive Committee on January 14 was approved. The final budget for 1982 and the approved budget for 1983 are presented below.

<u>Income</u>	<u>1982 Proposed and Approved</u>	<u>1982 Actual</u>	<u>1983 Proposed and Approved</u>
ACS Allotment	5200	5200.00	5466
New Members	150	57.50	84
Savings Interest	1250	1531.09	1250
Short Courses	2500	2000.00	2000
TarHelium Advertisements	200	1453.60	1600
Other	-	938.90	500
Total Income	<u>9600</u>	<u>11181.09</u>	<u>10900</u>
<u>Expenses</u>			
Awards			
Scholarship Reserve Fund	300	300.00	300
Centennial Scholarship	1000	1000.00	1000
High School Chemistry	100	.00	600
High School Teacher	500	.00	00
Total Awards	<u>1900</u>	<u>1300.00</u>	<u>1900</u>
Donations			
Polymer Group	100	100.00	150
N.C. Academy of Sciences	100	100.00	100
Total Donations	<u>200</u>	<u>200.00</u>	<u>250</u>
Short Courses			
Honoraria	1000	1000.00	1000
Incidental Expenses	200	74.42	100
Total Short Courses	<u>1200</u>	<u>1074.42</u>	<u>1100</u>
Meetings			
Honoraria	600	150.00	500
Travel and Expenses	1500	601.79	1050
Social Hours and Meals	900	661.96	900
Miscellaneous		165.52	200
Meeting-in-Miniature	200		500
Total Meetings	<u>3200</u>	<u>1379.27</u>	<u>3150</u>
TarHelium	2400	3398.86	3200
Administrative			
Travel	600	1000.40	1200
Miscellaneous	100	541.65	100
Total Administrative	<u>700</u>	<u>1542.05</u>	<u>1300</u>
Total Expenses	<u>9600</u>	<u>9094.60</u>	<u>10900</u>

Composition of Assets as of 1/1/83

Checking Account	\$ 1547.05
Money Market Account	11366.21
Scholarship Fund	1360.66
Loan to SERMI 84	500.00
	<u>\$14773.92</u>

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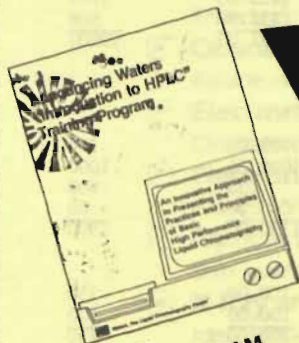
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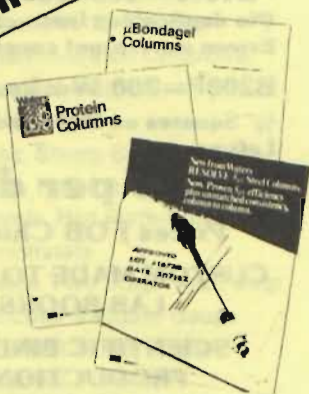
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CHANGE IN SHORT COURSE TOPIC

It was previously announced that the topic of the spring short course would be "applications of minicomputers." Due to scheduling conflicts on the part of the instructor, this course must be postponed. In its place will be a short course on basic statistics for chemists, biologists, environmental scientists, etc. The course is tentatively scheduled for mid April. Further details will be presented in the next issue of the TarHelium.



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ANNUAL MEETING OF NC ACADEMY OF SCIENCE
TO FOCUS ON DEVELOPMENT OF SCIENCE
IN THE SOUTH

The 1983 annual meeting of the North Carolina Academy of Science will be held in conjunction with the centennial celebration of the founding of the Elisha Mitchell Scientific Society, and will have as its general theme the development of science in the South. The meeting will also be held jointly with the North Carolina Archaeology Council, the Southern Association for the History of Science and Technology, and Sigma Xi.

The program will include both platform and poster presentations, two keynote speakers, local field trips, and various social events including a reception, banquet and dance on Friday evening. A full agenda will be published in the April issue of the TarHelium. For further information, contact Robert Thompson (549-0411) or call the Academy office in Chapel Hill (942-2552).

MEETING-IN-MINIATURE - FINAL CALL FOR PAPERS

The annual Meeting-in-Miniature is scheduled for Saturday, April 16, on the campus of UNC-CH. The meeting will start at approximately 8:30 a.m. and will end at noon with a luncheon and presentation of awards. An application for presentation of a paper is included herewith. The deadline for receiving titles is Monday, March 14, 1983. Please respond early to facilitate preparing the complete program for the April TarHelium.

Contributions are encouraged from both academic and non-academic laboratories. Participation by government and industrial laboratories has increased over the last several years and the Executive Committee hopes that participation by non-academic labs will be even greater this year. Also, we would be delighted to have people attend this meeting even if they do not present a paper.

APPLICATION
Meeting-in-Miniature
Saturday Morning, April 16, 1983
University of North Carolina
at Chapel Hill

Author(s): _____

Position(s): _____

Presented by: _____

Institution: _____

Title of Paper: _____

Section: _____ Analytical _____ Inorganic
 _____ Biochemical _____ Organic
 _____ Chemical Education _____ Physical
 _____ Polymer

Regular Session Only: _____ *Poster Session Only: _____

*Either Regular Session or Poster Session: _____

Type of Projector Needed (if any): _____

Application Deadline: Monday, March 14, 1983

Mail Application To: Dr. Bernard Spielvogel
Chemistry Department
US Army Research Office
Post Office Box 12211
Research Triangle Park, NC 27709

*If sufficient interest is shown, a poster session will
be added to the program.



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