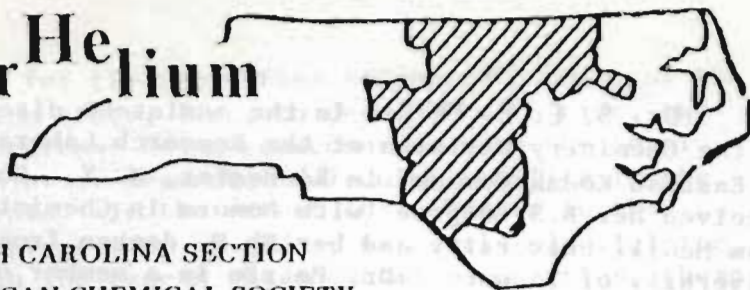


Tar Helium



NORTH CAROLINA SECTION
AMERICAN CHEMICAL SOCIETY

Vol. 10, No. 3

Raleigh, N.C.

November, 1979

"PHYSICAL AGING OF GLASSY POLYMERS"

Speaker: Dr. S. E. B. PETRIE
Eastman Kodak Company

Date: November 13, 1979

Place: Duke University
Durham, North Carolina

Time: 5:30 Happy Hour
Old Trinity Room
Union Building

6:30 Dinner *
Old Trinity Room
(\$7.00 full members; student
members half price)

8:00 Lecture
Room 103
Gross Chemical Laboratories

*Please make reservations by Friday, November 9,
1979. Call Sue Hester at 966-1566 in Chapel Hill,
Terry Laing at 684-2414 in Durham or Linda Archer
at 737-2548 in Raleigh.

Dr. S. E. B. PETRIE is the assistant director of the Chemistry Division at the Research Laboratories of Eastman Kodak Company in Rochester, N. Y. She received her B.S. degree (with honors in Chemistry) from McGill University and her Ph.D. degree from the University of Toronto. Dr. Petrie is a member of the American Chemical Society, a Fellow of the American Physical Society, and a member of the Materials Research Society. Her research interests include correlations of polymer structure and physical properties, studies of the amorphous solid state polymer diluent systems, and liquid crystals.

* * *

Much insight into the origin of the variability in physical properties and of various aging phenomena of glassy or partially glassy polymers [e.g. poly(ethylene terephthalate), bisphenol A polycarbonate, polystyrene] can be gained from consideration of the non-equilibrium nature of the glassy state. Because of the kinetic aspect associated with the transformation of a melt to a glass in the glass transition temperature interval, the glassy states of materials prepared under normal cooling conditions have excess enthalpy and volume relative to those of the corresponding equilibrium states that can be achieved through slow cooling or annealing regimes. For glasses with excess thermodynamic properties, there is a thermodynamic

MICROANALYSES

Analysis for all elements

Trace analyses and molecular weights

GALBRAITH LABORATORIES, INC.

P.O. Box 4187 • Knoxville, TN 37921

(615) 546-1335

potential for the properties to approach those of the equilibrium state, i.e., to decrease with time, the rate of decrease being commensurate with the level of molecular or segmental molecular mobility in the glassy state. To the extent that changes in the physical properties of glassy materials parallel the changes in the excess thermodynamic properties, these property changes are attributed to alterations in the thermodynamic state, and not to structure formation other than the normal liquidlike packing of molecules or chain segments. Preliminary studies suggest that the rather substantial changes observed in some of the physical properties, particularly the flexural properties, of glassy or partially glassy polymers subjected to various annealing regimes at temperatures below their respective glass transition temperatures are associated with the loss of excess thermodynamic properties that take place as a result of the annealing processes.

Dr. William L. Switzer
Department of Chemistry
North Carolina State University
Raleigh, North Carolina 27650

LATE DELIVERY OF THE TARHELIUM

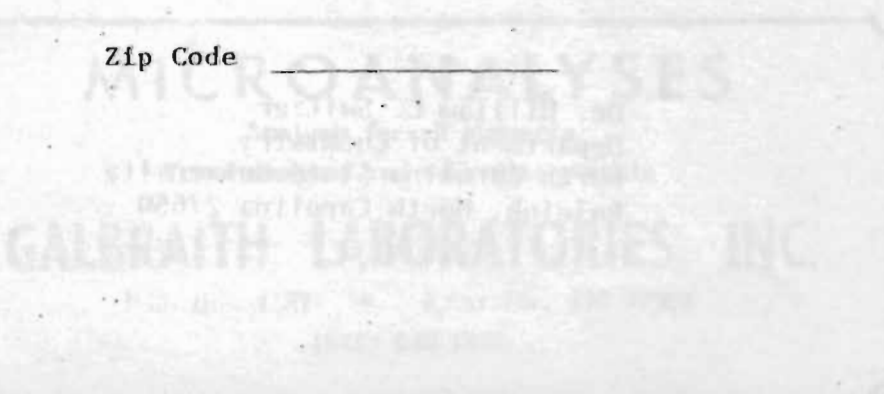
Recently a number of people have complained about late delivery of the TarHelium. Unless the meeting is early in a given month (as occurred in October), the TarHelium is mailed on or around the first of the month. The post office claims that there should be no more than a 24 hour delay at each station through which the TarHelium must pass. Conservatively everyone should receive the TarHelium by the 10th of the month.

To identify problem points in delivery, the post office has asked that I survey the section to determine when the TarHelium arrives at each Zip code. Even if this issue arrives on time, I would appreciate having the tear-off slip returned to me indicating the date received and your Zip code.

Whenever the TarHelium arrives after the 10th of the month (or the Friday before the scheduled meeting date), I would appreciate your sending me, the Editor, a card with the arrival date and Zip code. My address is given as the return address on the back cover of each issue.

Date Received _____

Zip Code _____



REPORT FROM THE NOMINATING COMMITTEE

The nominating committee has met and formulated a slate of candidates who will be presented for nomination at the November meeting. Nominations will be accepted from the floor, but the person making a nomination must have: 1) the approval of the nominee and 2) a biography of the nominee at this meeting. The ballots must be delivered to the printer on Wednesday, November 14th, which is one day after the November meeting.

The proposed slate of candidates is:

Chairman:	FORREST GETZEN (NCSU)
Treasurer:	ROBERT IZYDORE (NCCU)
Chairman-Elect:	WILLIAM GUTKNECHT (RTI) KATHY MacLEOD (EPA)
Secretary:	SLAYTON EVANS (UNC) RICHARD NEELEY (Meredith)
Alternate Councillor:	ROBERT GHIRARDELLI (ARO) MONICA NEES (NCSTRC)
Councillor:	MARCUS HOBBS (Duke) CHARLES MORELAND (NCSU)

VWR WHERE MEETING SCIENTIFIC NEEDS IS A SCIENCE

Meeting the demands of modern science is challenging; so challenging that we've developed that challenge into a science. A science we take seriously.

Through years of service to the scientific community we've found what's needed and wanted



This experience has challenged us to perfect a total concept supply system.

Starting with our extensive line of equipment and supplies, we offer products to fit your every need.

VWR chemical reagents, for instance, are manufactured by highly respected firms. Making and bottling reagents is what they do best. Delivering them is what we do best. VWR reagents are carefully selected to include those items most frequently ordered.

Our packaging is designed for maximum safety in handling and storage. Our delivery is designed to be free of bottlenecks.

Our recently introduced constant temperature line of ovens, baths, circulators and vacuum ovens offer truly advanced engineering and design. Exceptional quality at no increase in price.

In fact, we stock over 30,000 scientific items in local and regional warehouses near you.



Our system, people, computers and a nationwide warehouse network provides you with service second to none.

On the average we ship over 90% complete from stock and that's delivery.

The on time delivery record we enjoy is possible because of the continued refinement of our system.



Our newest customer service, "on-line customer terminals," permits computer direct ordering from your office and now are being installed in facilities across the country.

VWR.
WHERE MEETING SCIENTIFIC NEEDS IS A SCIENCE.

VWR Scientific
subsidiary of Univar

PO BOX 13007
690 MIAMI CIRCLE
ATLANTA, GA 30324
404-262-3141
1-800-241-5450

AREA SEMINARS

- Nov 12 Dr. RICHARD PALMER, Duke University, "Recent Developments in Photoacoustic Spectroscopy," 3:30 p.m., Room 124 Dabney Hall, NCSU.
- 13 Dr. S. E. B. PETRIE, Eastman Kodak Company, ACS Lecture, 8:00 p.m., Room 103 Gross Chemical Laboratory, Duke.
- 15 Dr. ALBERT I. MEYERS, Colorado State University, "Asymmetric Carbon-Carbon Forming Reactions," 11:00 a.m., Room 308 Venable Hall, UNC-CH.
- 16 Dr. S. L. HOLT, University of Georgia, "Detergentless Microemulsions: Unique Media for Chemical Reactions," 3:30 p.m., Room 130 Gross Chemical Laboratory, Duke.
- 19 Dr. CARL KRESPAN, E. I. DuPont, Title to be announced, 3:30 p.m., Room 124 Dabney Hall, NCSU.
- 29 Dr. JACK M. WILLIAMS, Argonne National Laboratory, "Synthesis, Structure, and Electrical Conductivity Studies of One-Dimensional Metals: An Emerging Underlying Unity," 11:00 a.m., Room 308 Venable Hall, UNC-CH.
- 30 Dr. J. CARDENAS, University of North Carolina-Chapel Hill, "Isoenzymes: Relatives, Friends, and Neighbors," 3:30 p.m., Room 130 Gross Chemical Laboratory, Duke.
- Dec 1 Dr. HENRY BLOUNT, University of Delaware, "Spin Trapping in Electrochemistry," 3:30 p.m., Room 124 Dabney Hall, NCSU.

TARHELIUM IS PUBLISHED BY THE NORTH CAROLINA SECTION OF THE AMERICAN CHEMICAL SOCIETY. THE VIEWS EXPRESSED HEREIN ARE NOT NECESSARILY THOSE OF THE SECTION. DIRECT ALL CORRESPONDENCE TO DR. WILLIAM L. SWITZER, EDITOR, C/O CHEMISTRY DEPARTMENT, NORTH CAROLINA STATE UNIVERSITY, RALEIGH, N. C. 27650.

NON PROFIT
ORGANIZATION
U.S. POSTAGE
RALEIGH, N. C.

PERMIT NO. 491

EXECUTIVE COMMITTEE

Eric Wiechert (*Cutter*), Chairman
Forrest W. Getzen (*NCSU*), Chairman-Elect
Kathryn MacLeod (*EPA*), Secretary
Arthur C. Diesing (*Liggett & Myers*), Treasurer
William L. Switzer (*NCSU*), Editor
Marcus Hobbs (*Duke*), Councilor
Ernest Eliel (*UNC*), Councilor
Maurice Bursey (*UNC*), Councilor
Robert Ghirardelli (*ARO*), Alternate Councilor
Halbert Carmichael (*NCSU*), Alternate Councilor
Colin Pitt (*RTI*), Alternate Councilor
Monica Nees (*NC/STRC*), Past Chair
Suzanne Purrington (*NCSU*), Past Chairman
Richard Palmer (*Duke*), Past Chairman

GLASSBLOWING

EQUIPMENT MADE TO SPECIFICATIONS IN
PYREX OR QUARTZ. REPAIR YOUR
BROKEN EQUIPMENT FOR LESS THAN
HALF THE COST OF NEW.

GALBRAITH ENTERPRISES, INC.

4611 G Central Avenue, Knoxville, Tenn. 37921

P. O. Box 4031

(615) 546 1339