

THE

Tar Helium



A Publication of the North Carolina Section of the American Chemical Society

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January 1987

Wear of Rubber by Metal and Vice Versa

A Lecture by
Dr. Alan N. Gent
Institute of Polymer Science
University of Akron

Thursday, January 8, 1987
North Carolina State University
Faculty Club

Sponsored by
North Carolina Section of ACS and Polymer Group

Social Hour
5:30 p.m.
Faculty Club

Dinner
6:30 p.m.
Faculty Club Buffet
\$10 members/\$5 students

Lecture
7:30 P.M.
Faculty Club

(Directions to Faculty Club – page 2)

Anyone interested in the lecture is invited to attend. If you are going to join us for dinner, please make reservations by 4:00 p.m. Monday, January 5. In Chapel Hill call Debbie Edwards at 962-2172; in Durham call Sue Dickerson at 684-2414; in Raleigh call Joyce Dunn at 737-2545. Call Joyce Dunn in Raleigh at 737-2545 to cancel reservations.

Alan N. Gent — Dr. Gent began his career at 16 by working as a laboratory assistant at the John Bull Rubber Company in Leicester, England. Two years later he passed the B.Sc. examination of London University. After spending two years in the military, he began research work at the British (now Malaysian) Rubber Research Association during which time he received his Ph.D. from London University without ever attending lectures. In 1961, he joined the University of Akron as Professor of Polymer Physics. During his stay at Akron, he has been Assistant Director of the Institute of Polymer Science and Dean of Graduate Studies and Research. He has served as Visiting Professor in several disciplines including Materials at Queen Mary College in London, Chemical Engineering at McGill University in Montreal and Aerospace Engineering and Mechanics at the University of Minnesota. He has served as chairman of three Gordon Research Conferences and president or chairman of three scientific societies: High-Polymer Physics, Adhesion and Rheology. Dr. Gent received the Mobay Award of the Cellular Plastics Division of the Society of the Plastics Industry, the Bingham Medal of the Society of Rheology, the Colwyn Medal of the Society of Testing and Materials, the International Research Award of the Society of Plastics Engineers and the Outstanding Researcher Award of the University of Akron.

Wear of Rubber by Metal and Vice Versa

An experimental study is described of the abrasion of several representative elastomers by a knife-blade abrader. In some instances wear of the elastomer is dominated by mechanical rupture (tearing), whereas in other cases chemical deterioration of the elastomer is evident and the wear debris is soft and sticky. The knife blade is also worn away, although much more slowly, at different rates against different elastomers and more rapidly in an inert atmosphere than in air. These diverse observations are shown to be in accord with the following hypothesis: free radical species are generated by mechanical rupture of elastomer molecules under frictional sliding conditions. They undergo reactions with oxygen, if present; with polymer molecules; or with other free radicals, as in the shear mastication of a corresponding unvulcanized material. In addition, they can react directly with steel, the products of this reaction being removed with the rubber wear debris.

DIRECTIONS TO THE NCSU FACULTY CLUB

The NCSU Faculty Club is located at the intersection of the Beltline and Hillsborough Street in Raleigh. It is directly across the Beltline from Meredith College and between the Beltline and the NCSU Veterinary School and fairground complex. If approaching from Durham or Chapel Hill on I-40 east, take the Wade Ave. exit to the Beltline heading south toward Sanford. Travel one exit to Hillsborough St. and turn right onto Hillsborough St. The Faculty Club is the first right turn off Hillsborough St. If approaching from Fayetteville or Clayton, take I-40 west from South Saunders St. to the Beltline. Head north on the Beltline toward Wake Forest. Hillsborough St. is the third exit off the Beltline. After following the exit loop, turn right onto Hillsborough St. The Faculty Club is the second right turn off Hillsborough St.

THE CENTENNIAL SCHOLARSHIP AWARD

The North Carolina Section of the ACS announces its CENTENNIAL SCHOLARSHIP AWARDS for 1987. Up to three awards of \$500 each will be made; normally, two will be awarded to graduate students from doctoral-granting institutions and one to a student from an institution offering the master's degree or significant opportunities in research to undergraduate students. These awards will recognize achievement and potential in chemistry research and should be used to help the student further that potential.

Award Criteria include research accomplishments, excellence of academic record, and quality of the application.

Eligibility requirements are attendance at a college or university within the NC section territory and research in a department of chemistry, biochemistry, or chemical engineering.

Applications must include duplicate copies of the following:

- a summary, up to 1000 words, written by the applicant describing research accomplishments or progress,
- a letter of recommendation from the student's research director,
- a copy of the appropriate transcript(s) (graduate or undergraduate), and
- a description of how the award will be used.

Restrictions for use of the award require the student chosen to consult with his or her research advisor about how to use it. Travel to a national ACS meeting, tuition for an ACS short course, purchase of technical books or support of research would qualify as suitable uses. The award must not be used to support research already funded by other sources.

The deadline for submitting applications is Friday, March 20, 1987. Submit applications to:
Dr. Robert W. Shaw
U.S. Army Research Office
P.O. Box 12211
Research Triangle Park, N.C. 27709-2211

Award recipients will be announced at the Meeting-in-Miniature on April 11, 1987.

ACS PRESIDENT TO SPEAK TO N.C. SECTION IN FEBRUARY

Dr. Mary L. Good, national ACS president, will address the North Carolina Section at its regular monthly meeting in February. See the "Future Programs" section in this issue for date and location information. The February *TarHelium* will provide details of this visit.

FUTURE PROGRAMS

Speaker: Dr. Mary Good	Date: Feb. 18, 1987
Location: UNC-Chapel Hill	
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Program: Molecular Modeling	Date: March 17, 1987
Location: UNC-Computer Science	
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Program: Meeting-in-Miniature	Date: April 11, 1987
Location: Duke	
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Program: Chromatography Symposium/ SEAAC	Date: May 14, 1987 (Symp.) May 15 & 16 (SEAAC)
Location: NCSU—McKimmon Center	
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APPLICATION

Meeting-in-Miniature
Saturday, April 11, 1987
Duke University

Author(s): _____

Phone number of senior author: _____

Position(s): _____

Presented by: _____

Institution: _____

Title of Paper: _____

Session: ___ Analytical ___ Inorganic
 ___ Biochemical ___ Organic
 ___ Chemical Education ___ Physical
 ___ Polymer ___ Other

Regular session ___ *Poster session ___ *Either session ___

Type of projector needed (if any) _____

Deadline for submission: Friday, February 20, 1987

Mail Application To: Dr. William E. Hatfield
Department of Chemistry
University of North Carolina
Chapel Hill, N.C. 27514

*If enough people are interested, the poster session will be added.

LOCAL ELECTION RESULTS ARE TABULATED

Local election results were tabulated in December. The four new officers are:

Bill Hatfield	Chairman-Elect
Joan Bursey	Treasurer
Bill Little	Councilor
Bill Gutknecht	Alternate Councilor

CHROMATOGRAPHY SYMPOSIUM

May 14, 1987

The North Carolina Section of the ACS and the Triangle Chromatography Discussion Group (TCDG) are cosponsoring the Fourth Triangle Chromatography Symposium and Exhibition Thursday, May 14, 1987, at the Jane S. McKimmon Center at North Carolina State University. The program is still subject to change but is rapidly becoming finalized. The speakers and titles or topics that have been tentatively arranged are:

Thomas Beesley, Chiral Separations
John Dolan, Expert Systems in HPLC
R.K. Gilpin, Surface Chemistry of Bonded Materials
Milton Lee, Supercritical Fluid Chromatography
James Little, Robotic Sample Preparation for GC and HPLC
Marvin Vestal, HPLC-Mass Spec Interfaces
Keneth Wilson, Microbore and Narrow Bore Separations of Proteins and Polypeptides

N.C. SECTION CHEMISTS WIN SPECIAL HONORS

Three local section members have received prestigious awards in recent months. Dr. Ernest Eliel, a William Rand Kenan professor of chemistry, received the North Carolina Award, the highest award bestowed by the state, in November.

Two local members won national awards from the American Chemical Society. Dr. Charles H. Lochmuller of Duke University is the recipient of the ACS Award in Chromatography, which is sponsored by SUPELCO Inc. Dr. V.T. Stannett of North Carolina State University earned the ACS Award in Polymer Chemistry; it is sponsored by Mobil Chemical Co.

TRIANGLE CHROMATOGRAPHY DISCUSSION GROUP

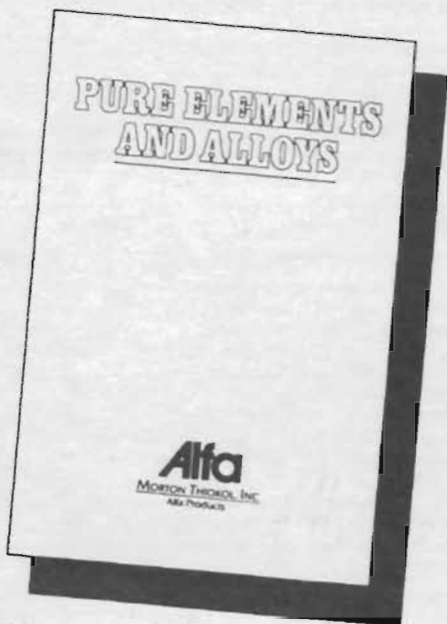
The Triangle Chromatography Discussion Group will meet Thursday, January 22, 1987. Featured at the meeting will be Dr. William H. Pirkle, Professor of Chemistry at the University of Illinois. Dr. Pirkle will present a lecture on "Chiral Recognition: From Chromatography to Synthesis." The meeting will be held at the North Carolina State University Faculty Club. A buffet dinner will be served at 6:00 P.M.; the cost is \$8.00. The lecture will begin at 7:30 P.M., and a reception will follow.

Anyone interested is invited to attend the lecture or the dinner or both. For those interested in joining the group for dinner, please make dinner reservations by calling Dr. John Hines at RTI, 541-6647. The reservations deadline is noon Tuesday, January 20.

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American Chemical Society
P.O. Box 3337
Columbus, Ohio 43210

Changes in membership status also should be submitted to the above address.

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