

RHEOLOGY BULLETIN

Publication of The Society of Rheology, Inc.

Vol. 44, No. 2



August, 1975

46TH ANNUAL MEETING

OCTOBER 27-30, 1975

Chase Park Plaza Hotel
St. Louis, Missouri

Program Committee:

A. N. Gent (Chairman) Institute of Polymer Science, University of Akron, Akron, Ohio 44325; C. Goldstein, Whirlpool Corporation Research Center, Benton Harbor, Michigan 49022; J. L. Kardos, Materials Research Laboratory, Washington University, St. Louis, Missouri 63130; E. A. Kearsley, Polymer Division, National Bureau of Standards, Gaithersburg, Maryland 20760; C. L. Sieglaff, Diamond Shamrock Corporation, Painesville, Ohio 44077

Local Arrangements Committee:

J. L. Kardos and C. T. Hill (Co-Chairmen); L. E. Nielsen, Monsanto Research Dept., 800 N. Lindbergh, St. Louis, Missouri; E. M. Wu, Washington University, St. Louis, Missouri.

Invited Speakers

R. R. Myers, *Viscoelastic Changes Accompanying the Drying of Coatings.*

H. Kolsky, *The Waves Generated by Brittle Fractures in Glass.*

A. N. Gent, **BINGHAM AWARD PLENARY LECTURE.**

W. G. Knauss, *Fracture in Polymeric Solids at Low and High Rates.*

Registration

The registration fee has been set at \$20 for members and \$30 for non-members. A registration desk will be open from 6 p.m. to 9 p.m. on Sunday, October 26, and from 8 a.m. to 2 p.m. on Monday, October 27, at the Chase Park Plaza Hotel.

Reception and Banquet

There will be a reception from 7 p.m. to 9 p.m. on Sunday evening, October 26, for those attending the meeting. The Bingham Award Banquet will be held on Tuesday evening, October 28. It will be followed by a talk on *Extraterrestrial Materials and the Study of the Early Solar System*, given by Professor Robert M. Walker, Director of the McDonnell Center for the Space Sciences, Washington University.

Monday Evening Informal Discussion

There will be an informal discussion on Monday evening on the topic: *Film Formation and Orientation*. The discussion leaders are T. Alfrey, Jr., of Dow Chemical Company; J. N. Craver of Union Carbide, H. J. Donald of Dow Chemical and D. J. Massa of Eastman Kodak.

SOCIETY OF RHEOLOGY SHORT COURSE

A short course on *The Mechanics of Polymer Processing and the Effects of Processing Variables on Structure and Performance* conducted by T. Alfrey, Jr., Dow Chemical Company, Midland, Michigan will be offered on Saturday, October 25, and Sunday, October 26, at Washington University in Room 215 of the Cupples Building.

Fee for the course and notes is \$75.00 prior to September 19, 1975. A late registration penalty of \$25.00 is acceptable thereafter. Student rates are one half of the above.

Further information may be obtained from Edward A. Collins, B. F. Goodrich Chemical Company, Avon Lake, Ohio 44012 (Telephone: 216-933-6181). Checks should be made payable to the "Society of Rheology" and sent together with the registration form on the back page of this Bulletin to Dr. Collins.

BINGHAM MEDAL

Alan N. Gent, Professor of Polymer Physics and Assistant Director of the Institute of Polymer Science at the University of Akron, is the 1975 Bingham medalist. His biography appears on page 2.

1975 WINTER MEETING

JANUARY 26-29, 1976

JACK TAR HOTEL

SAN FRANCISCO, CALIFORNIA

CALL FOR PAPERS

DEADLINE FOR SUBMISSION — OCTOBER 15, 1975

The submission of contributed papers for presentation at the 1975 Winter Meeting is open to both members and non-members of the Society. Suggested topics include: (1) Deformation and Fracture of Solids, (2) Molecular Rheology, (3) Rheology of Composites, (4) Adhesion, (5) Rheology of Film Forming, and (6) Elastic Effects in Flow.

Topic (3) is intended to provide continuity with last year's Winter Meeting; (5), with the beer session discussion at this fall's meeting — hence the deadline for abstracts on this topic may be extended to the end of October.

An abstract of 250 words or less is required prior to October 15. Abstracts should be sent to:

R. F. Landel, Program Chairman
Society of Rheology
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91103

RHEOLOGY BULLETIN
Raymond R. Myers, Editor
Department of Chemistry
Kent State University
Kent, Ohio 44242

Please adhere to the 250 word limitation; avoid the use of equations and references in the Abstract. The Program Committee (R. F. Landel, E. B. Christiansen, and D. Kaelble) will review the submitted Abstracts.

Acceptance will be based on technical content and relevance to rheology but without regard to the specific topic. While each Abstract will be judged on an individual basis, those contributors who choose to submit more than one paper should bear in mind the exigencies of program scheduling.

Invited lectures will be given on topics of broad general interest to the Society. These will be announced in the next bulletin.

BIOGRAPHICAL SKETCH OF PROFESSOR ALAN N. GENT

Dr. Alan N. Gent, Bingham Medalist for 1975, is currently Professor of Physics and Assistant Director of the Institute of Polymer Science at the University of Akron. From the University of London, he received a B. Sc. degree in physics and mathematics and, in 1955, the Ph. D. degree for a study of the mechanics of rubberlike materials, carried out at the British Rubber Producers' Research Association where he held positions between 1949 and 1961. In 1961, he accepted a professorship at the University of Akron and was appointed Assistant Director of the Institute of Polymer Science in 1963. During the 1969-1970 academic year, he was a visiting professor at Queen Mary College in London and a Senior Research Fellow of the Science Research Council of Great Britain.

Professor Gent has made many noteworthy contributions to the science and technology of rubber and allied materials. He has investigated mechanisms of cohesive fracture; elastic, thermoelastic properties; strain-induced crystallization; the effect of ozone on surface cracking; crack growth in elastomers under deformation; friction and wear; birefringence; the nucleation and growth of gas bubbles in elastomers; and the properties of foamed materials.

Dr. Gent is a Fellow of the American Physical Society. He has served as chairman of the Gordon Research Conference on Elastomers and the Gordon Research Conference on the Chemistry and Physics of Cellular Materials. In 1964, he and A. G. Thomas received the First Mobay Award of the Society of the Plastics Industry for their work on cellular materials.

VIIth INTERNATIONAL CONGRESS ON RHEOLOGY

AUGUST 23 - 27, 1976
CHALMERS UNIVERSITY OF TECHNOLOGY
GOTHENBURG, SWEDEN

Honorary President: R. S. Marvin, National Bureau of Standards, Washington, D. C.

Coordination Committee: A. Björkman, Technical University of Denmark, Lyngby; J. J. Lindberg, University of Helsinki, Finland; and N. Bergem, Central Institute for Industrial Research, Oslo, Norway.

The Swedish Society of Rheology, a section of the Swedish National Committee for Mechanics, will act as the host organization. All aspects of rheology are within the scope of the Congress. Contributions that aim at a reduction of the diversity of the theoretical and empirical framework by introducing new unifying concepts will be especially welcome.

Contributed Papers: Participants intending to contribute papers are asked to give the title and a summary (maximum 300 words) with the preregistration form which should be returned before October 1, 1975.

Registration Fee: A registration fee of 500 Skr will be charged; this includes participation in the scientific sessions and the social functions, and a copy of the Congress Proceedings. The Congress banquet is not included.

Exhibition: During the Congress, there will be an exhibition of rheological measuring devices and related equipment.

Address for Correspondence: All correspondence and inquiries concerning the VIIth International Congress on Rheology should be addressed to: Professor Josef Kubat, Chalmers University of Technology, Fack, S-402 20, Gothenburg 5, Sweden.

IUPAC Microsymposium: Immediately following the Congress a IUPAC Microsymposium on "Long - Term Properties of Polymers and Polymeric Materials" will be held in Stockholm, August 30 - September 1, 1976. Information concerning the IUPAC Symposium may be obtained from Prof. B. Ranby, Department of Polymer Technology, Royal Institute of Technology, S-100 44 Stockholm, Sweden

Travel Arrangements: At the present time, about 60 people have indicated interest in a charter flight to Gothenburg for the VIIth International Congress. If you are thinking of going, please notify J. R. Knox, P. O. Box 400, Naperville, Illinois 60640. Current three week excursion fare is \$599; \$532; Apex fare is \$527; \$464; and charter fare is ca. \$400; \$325 (with a minimum of 190 people; higher with less people) The first figure is Chicago base and the second figure is New York base.

NOMENCLATURE

The final version of the report on the Proposed Nomenclature for Steady Shear Flow and Linear Viscoelastic Behavior has been prepared by the Nomenclature Committee and will be published in a forthcoming issue of the Transactions.

TRANSACTIONS OF
THE SOCIETY OF RHEOLOGY

Proudly Dedicates
the First Issue of
Volume 20
1976

to

DR. FREDERICK R. EIRICH

on the occasion of his
70th Birthday

Presented at the joint meeting of
USA and Japanese Societies of Rheology.
Honolulu, June, 1975

Raymond R. Myers Editor

CALL FOR PAPERS

A symposium at the Annual Technical Meeting of the Society of Plastic Engineers in Atlantic City, New Jersey, April 26 - 29, 1976, will be jointly sponsored by the SPE and the Society of Rheology.

All individuals planning to submit a paper should contact M. Shida, Chemplex Co., Rolling Meadows, IL 60008 before October 1, 1975, with the title of the paper.

The abstract and paper will be due by December 1, 1975.

COMMITTEES

Executive Committee:

R. S. Rivlin, President
J. R. Knox, Vice-President
E. A. Collins, Treasurer
R. A. Mendelson, Secretary
R. R. Myers, Editor
F. R. Eirich, Past President
I. M. Krieger
L. J. Zapas

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E. H. Lee, Chairman 1976
E. Baer, 1975
R. L. Ballman, 1976
W. W. Graessley, 1977
D. H. Kaelble, 1975
R. S. Stein, 1977

Nominating Committee:

F. R. Eirich (Chairman)
J. D. Ferry
D. H. Kaelble

Nomenclature Committee:

C. Sieglauff (Chairman)
R. B. Bird
R. Dickie
F. R. Eirich
N. W. Tschoegl

Site Selection and Topics Committee:

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R. S. Marvin
R. R. Myers
M. C. Shen

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Committee on Industry-University Relations:

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R. Landel
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Ad Hoc Committee on Program Guidelines:

S. S. Sternstein (Chairman)
A. N. Gent
R. R. Myers
C. L. Sieglauff

Representative on International Committee on Rheology:

N. W. Tschoegl

Representative on National Committee on Theoretical and Applied Mechanics:

R. S. Rivlin

Short Courses:

M. H. Birnboim, Chairman
E. A. Collins
J. L. White

NOMINATIONS

The nominating committee, consisting of F. R. Eirich, J. D. Ferry, and D. H. Kaelble, has proposed the following slate of officers for 1976-77:

President: J. R. Knox
Vice President: N. W. Tschoegl
I. M. Krieger

Secretary: R. A. Mendelson
Treasurer: E. A. Collins
Editor: R. R. Myers

Executive Committee at Large (2)

E. A. Kearsley
I. M. Krieger
C. L. Sieglauff
S. S. Sternstein

ANNOUNCEMENTS

A. I. C. H. E. ANNUAL MEETING

LOS ANGELES, CALIFORNIA
NOVEMBER 16-20, 1975

A session on Molecular aspects of Polymer Rheology will be held at the annual meeting of the American Institute of Chemical Engineers, November 16-20, 1975, in Los Angeles. Correspondence regarding this session should be sent to W. W. Graessley, Chemical Engineering Department, Northwestern University, Evanston, Illinois 60201, or: M. Shida, Chemplex Company, Rolling Meadows, Illinois 60008.

A technical session on the Application of Rheology to Polymer Processing is also being organized. For information on this session, contact: C. D. Han, Department of Chemical Engineering, Polytechnic Institute of New York, Brooklyn, New York 11201, or: L. H. Drexler, Bell Telephone Laboratories, Indianapolis, Indiana 46206

COLLABORATIVE RESEARCH IN TRIBOLOGY

Georgia Institute of Technology, Northwestern University, and Rensselaer Polytechnic Institute announce a two-year research effort entitled "Collaborative Research in Tribology." Tribology is the science and technology of interacting surfaces in relative motion.

A NEW JOURNAL

Elsevier Scientific Publishing Company, P. O. Box 211, Amsterdam, The Netherlands announces publication of the JOURNAL OF NON-NEWTONIAN FLUID MECHANICS.

MINUTES OF EXECUTIVE COMMITTEE MEETING

MARCH 9, 1975

KENT STATE UNIVERSITY, KENT, OHIO

Executive Committee members present: E. A. Collins, J. R. Knox, I. M. Krieger, R. A. Mendelson, R. R. Myers, R. S. Rivlin; also present: A. N. Gent. The meeting was called to order at 10:45 a.m. by the Vice President and was shortly thereafter chaired by the President.

1. Minutes of the October 20, 1974 Executive Committee meeting were approved as submitted.
2. It was moved, seconded and approved that registration fees for the 1975 Annual Meeting in St. Louis be set as follows: member registration \$20, non-member registration \$30.
3. R. S. Rivlin presented a new listing of committee appointments, and several corrections were noted.
4. E. A. Collins presented the Treasurer's Report, which consisted of the IRS Forms, the Society's financial statements, and financial records concerning the publication of the *Trans. Soc. Rheol.* These are reported separately by the Treasurer. Discussion of publications finances was continued in the Editor's Report. The Treasurer's Report was accepted.
5. R. R. Myers presented the Editor's Report. A new proposal for publication of *Trans Soc. Rheol.* has been received from John Wiley & Sons. Three options were presented: (1) publication from camera-ready copy at some savings from current costs, (2) cold type printing with unjustified right hand margins (similar to appearance of Polymer Letters, but with current quality paper) at current costs, and (3) current quality (hot metal) publication at increase cost, i.e., doubling subscription charge from \$0.003 to \$0.006 per page and increasing page charge basis from \$15 to \$18. Wiley further represented that the non-member subscription list has been developed at Wiley's expense and would remain with Wiley in the event the Society chooses to change publishers. It was pointed out that the current \$10 dues entitles members to a \$45 publication, that this is probably the best bargain available in scientific journals, and that this is largely responsible for the financial problems arising from increased costs of publications. The Editor's Report was accepted.
6. It was moved, seconded and passed that the Society accept the second option presented by John Wiley

(i.e., cold type and unjustified right margin at current cost schedule) and negotiate a three-year contractual agreement on that basis. It was further suggested that possible advertising options be investigated with a view to reducing author page charges.

7. It was reported by R. S. Rivlin that the program for the U.S. - Japan Joint Meeting in Hawaii, June 3-6, 1975, is in hand and will be published in the forthcoming issue of Bulletin. The Local Arrangements Chairman was instructed to make arrangements based on the registration fees, but without deficit to the treasury.
8. A. N. Gent reported on the Program Committee activity for the 1975 Annual Meeting at the Chase Park Plaza in St. Louis, Oct. 27-30, 1975. A call for papers is being issued with a deadline for abstract submission of July 12, 1975. Rivlin reported that C. T. Hill would handle local arrangements.
9. The report of the Ad Hoc Committee on Program Guidelines was accepted.
10. The proposal of AIP for printing of a new membership directory was discussed. It was moved, seconded and passed that an expenditure up to \$800 be authorized for a new membership directory with the selection of format to be made by the Secretary, subject to lower cost proposals.
11. A resolution was passed to extend the official condolences of the Society to the family of Professor Samuel H. Maron.
12. A resolution was passed to extend congratulations to Dr. Maurice Huggins on the occasion of his receipt of the Borden Award of the Organic Coatings and Plastics Division of ACS and of his receipt of an honorary D.Sc. from Kent State University.
13. Discussion of a 1976 Winter Meeting indicated that selection of the week of January 25 would be necessary to avoid conflict with other West Coast meetings. The meeting will probably be held at the Jack Tar Hotel in San Francisco.
14. R. S. Marvin, President of the International Committee on Rheology, has appointed R. S. Rivlin as representative to IUTAM.
15. The meeting was adjourned at 5:00 p.m.

Respectfully submitted,
R. A. Mendelson, Secretary

REGISTRATION FORM

SOCIETY OF RHEOLOGY SHORT COURSE

SAT., OCTOBER 25 and SUN., OCTOBER 26, 1975

Washington University, St. Louis, Missouri

NAME

ADDRESS

COMPANY AFFILIATION & ADDRESS

(ZIP)

PHONE: (Work): (Residence): (Please include Area Code)

DATE OF ARRIVAL

Mail with check for \$75.00 payable to the "Society of Rheology" before September 19, 1975 to Edward A. Collins, B. F. Goodrich Chemical Company, Avon Lake, Ohio 44012. (After September 19, \$25.00 late registration applies).