

RHEOLOGY BULLETIN

Publication of The Society of Rheology, Inc.

Vol. 45, No. 3



December, 1976

47th ANNUAL MEETING
February 27 - March 2, 1977
Biltmore Hotel
New York, N. Y.

(This is the official 1976 meeting)

Program Committee: Paul C. D. Han, Polytechnic Institute of New York (Chairman); I. M. Krieger, Case Western Reserve University; L. V. McIntyre, Rice University; J. C. Miller, Union Carbide Corporation; and J. L. White, University of Tennessee.

Local Arrangements Committee: John C. Miller (Chairman), Union Carbide Corporation, Bound Brook, New Jersey 08805; K. F. Wissbrun, S. J. Kurtz and L. H. Gross.

Invited Speakers:

W. R. Shewalter, *Recent Developments in Suspension Rheology.*

R. L. Hoffman, *Rheological Dilatancy and Structure Formation.*

Evan A. Evans, *Mechanics and Thermodynamics of Red Cell Membranes.*

John D. Ferry, *Rheology of Fibrinogen Solutions, Fibrin Clots and Fibrin Films.*

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. Sunday, February 27, and from 8:00 a.m. to 2:00 p.m. on Monday, February 28 at the Biltmore Hotel.

Sunday Evening Social Hour: Cash Bar and hors d'oeuvres, February 27, and from 8:00 a.m. to 2:00 p.m. on Monday, Biltmore Hotel.

Monday Evening Informal Discussion: (Beer Session) There will be a symposium presented on *Industry-University Cooperative Research: How Is It Done* J. L. Kardos (Chairman), N. Nakajima and J. T. Bergen will give a brief account of the Industry-University Relations Committee, followed with lectures by R. Buchdahl and K. L. DeVries on the symposium topic.

Tuesday Night - BINGHAM AWARD PLENARY LECTURE Lawrence E. Nielsen, Distinguished Service Fellow at Monsanto Corporate Research Department, Springfield, Massachusetts is the 1976 Bingham medalist. His biography appears on page 2.

SHORT COURSE ON RHEOLOGY: A short course on *Deformation and Fracture of Polymers* will be conducted by T. Smith, IBM, San Jose, California, and S. S. Sternstein, RPI, Troy, New York on Saturday, February 26 and Sunday February 27 at the Biltmore Hotel. Further details and a registration form appear on the back page of this bulletin.

48th ANNUAL MEETING
October 23 - 27, 1977
University of Wisconsin
Madison, Wisconsin

Program Co-Chairmen: L. V. Cancio, Chemplex Company, and W. W. Graessley, Northwestern University.

Local Arrangements Co-Chairmen: R. B. Bird and A. S. Lodge, University of Wisconsin.

Symposia Proposed:

Food Rheology
Biorheology
Oil Recovery Rheology
Rheology of Solids

Further details will be given in a later issue of the Bulletin.

IUPAC MEETINGS

Dublin, July 17-22, 1977—Symposium
Tokyo, September 4-10, 1977—26th Congress
Prague, August 1977—Microsymposium
Tashkent, USSR, October 10-14, 1977—Symposium
Dresden, GDR, May 1977—Microsymposium
Mainz, FRG, September 1979—Symposium

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

BIOGRAPHICAL SKETCH OF LAWRENCE E. NIELSEN

The 29th award of the Bingham Medal is made to Dr. Lawrence E. Nielsen. A native of Pilot Rock, Oregon, Dr. Nielsen is a 1940 *Magna Cum Laude* graduate of Pacific University. He received a Master of Science degree at the State College of Washington in 1942 and earned his doctorate in physical chemistry at Cornell University in 1945, working with Professor J. G. Kirkwood. He has devoted the past thirty-one years to the field of polymer rheology, initially at Monsanto Company's technical center at Springfield, Mass., and is now at the Company's Corporate Research Department in St. Louis where he serves as a Distinguished Science Fellow. In his spare time he has led or participated in sixteen expeditions to various Alaskan ice fields where he studied the rheology of glaciers.

Our medalist has contributed to the rheology of many types of polymeric systems ranging from melts through dispersions, crystalline polymers, glasses, powders, and reinforced composites where he made important pioneering achievements in all these areas. In addition, he played an important role in instrument development. To cite just one example, his design of the torsion pendulum has been widely used to improve our fundamental understanding of the dynamic properties of a wide range of materials.

His 1962 book on "Mechanical Properties of High Polymers" was a definitive work for its time and has been translated into a number of foreign editions. Few books on polymer rheology contain such a wealth of practical information, usefully organized and authoritatively described. His more recent book, in two volumes, "Mechanical Properties of Polymers and Composites" updates much of the earlier material and reflects his more advanced and broadened interests.

Dr. Nielsen has been an active member of the Society of Rheology for many years and has served on a number of its committees. The modest and quiet manner in which he has conducted himself throughout the years coupled with his scientific accomplishments have won him wide esteem and many friends throughout the technical community.

EDITOR'S REPORT TO THE EXECUTIVE COMMITTEE November 4, 1976

PUBLICATION INFORMATION

Volume 20 of the Transactions has 26 papers and 2 notes comprising 475 pages at the end of Issue 3 (July-September 1976). The first issue of ten papers was dedicated to Frederick R. Eirich on the occasion of his 70th birthday, and it includes an eight-page listing of the titles of his research publications. The second issue starts with the citation of Bingham Medalist Alan N. Gent. The third issue contains an erratum correction to Dr. Eirich's publication list. There are nine galley pages on hand for Issue 4 with pages unnumbered.

We are on target regarding the issuance of between 600 and 800 pages for Volume 20. Twelve manuscripts have been accepted and are in the hands of the publisher for Volume 21 (over and above the nine galley pages already in process for Issue 4 of Volume 20).

There are 30 papers currently in the hands of referees who report to the following assistant editors:

E. A. Collins,
S. Onogi
J. G. Savins,
C. L. Sieglaff,
A. Silberberg, and
J. L. White.

In 1975 we rejected 12 of the 61 manuscripts, 3 were withdrawn, and 7 are still in process; 39 of the papers were processed and accepted. Thus far in 1976 we have received 37 manuscripts; 14 have been accepted, 22 are still in process and one has been rejected.

At the beginning of the year we expected a shortage of original research papers and, upon authorization by the Executive Committee, began a practice of inviting review papers from selected individuals. The first person asked was Turner Alfrey; he accepted, but the paper has not yet been received. Meanwhile, the flow of manuscripts has increased and pressures for review papers have lessened. They will be solicited, nevertheless, on the basis of the service they will perform to the Society, regardless of manuscript count.

PERSONNEL CHANGES

The Executive Committee suggested that assistant editors for Japan and Europe be selected and given the duties of handling the refereeing of papers from their respective areas of the world. Dennis Onogi accepted for the Asian rheologists and A. Silberberg for Europe and the Middle East, particularly Israel. Dr. Onogi has been in the post long enough to have proved the wisdom of extending our editorial staff to leaders in other lands, and Dr. Silberberg has graciously accepted the assignments sent to him.

COOPERATION WITH THE JAPANESE SOCIETY

In his last communication Dr. Onogi requested that I write a letter extending an invitation for the Japanese Society to assist in the editing of TSOR.

This request has been granted and future issues of the Transactions will show this affiliation.

Raymond R. Myers
Editor

PRESIDENT'S MESSAGE

Plans to obtain a listing of interest areas of the members is progressing smoothly. The officers of AIP in New York are getting a good return of interest slips with the dues payments, although nowhere near 100%. Those of you who have not yet paid your dues, please return the interest area insert.

Enclosed with this mailing are the recommended changes to our Constitution and Rules suggested by the Constitution Committee and revised by the Executive Committee. Proposed changes to the Constitution may be submitted to a mail vote only after a majority of those attending the Annual Meeting recommend such a vote. Changes to the Rules may be submitted to a mail vote by either a majority of the members attending the Annual Meeting or the Executive Committee. Please take the opportunity to read these proposals before the New York meeting, so that we can save time at the business meeting. You have a copy of the present Constitution and Rules in the front of your most recent membership directory.

The proposed change to Article IV, Section 3, allows for the representation on the Executive Committee of Divisions. No change is needed if Divisions are not authorized. Because the office of Editor requires more than just a willingness to serve The Society, we felt that the proposed change to Article V, Section 2, would help ensure that the membership could elect the most qualified candidate. Article VIII allows for the formation of a Division of The Society and defines its place therein. This proposed addition to the Constitution is part of an overall effort to expand the rheological areas in which The Society is active without diluting the attention given to current areas of interest. For example, biorheologists and food rheologists currently are not particularly active in The Society because our meetings have emphasized synthetic polymers. We must continue this emphasis because of the large fraction of our members who are concerned with this field and the many unsolved rheological problems that still exist with polymers; but biorheologists and food rheologists, as specific examples, need a rheologically oriented organization as an umbrella under which they can operate, hold meetings, and generate symposia. I personally feel that approval of this proposed addition to the Constitution is one of the biggest steps we can take toward building a society that truly represents the whole field of rheology.

Proposed changes to Articles VI and VII of the Rules are housekeeping changes which acknowledge changes in The Society since the last amendment. For example, we are no longer a member of AAAS, but the present Rules authorize a representative. The proposed Article VIII of the Rules is an addition which elevates the Bingham Award to official status in The Society. Under the present Rules, it is only by action of each Executive Committee that the tradition of the award is continued.

So those are the proposals. The vote at the business meeting in New York will be on submitting them for a mail vote, not for approval or rejection.

Jack R. Knox

Report on International Committee Meeting at the VIIIth International Congress of Rheology

I attended the International Rheology Congress in Sweden on August 23-27, 1976 and, in the absence of N. Tschoegel, voted for The Society of Rheology at the business meeting. Scott-Blair, Saal, and J. Buergers were elected as associate members, without vote, to the International Committee. The mail vote had already settled on Italy as the site for the 1980 Congress, in the Naples vicinity. I mentioned the proposed 50th Anniversary meeting of the Society of Rheology, but did not insist on rescheduling the International Congress to 1979 and combining it with the 50th Anniversary. The Italians have now become quite enthusiastic about holding the meeting and I felt hard feelings would result if we convinced the delegates to withdraw the meeting from Italy. Offers were made from the U.S. and from Israel for the 1984 meeting. No decision could be made until 1980, but the consensus of the delegates present was that they would like to return to the U.S. Prof. Kubat was elected to be the Chairman of the International Committee and Tschoegel was elected as secretary. This concluded the meeting.

J. R. Knox

ANNOUNCEMENTS

Summer Rheology Course
June 27 - July 1, 1977

A course on "Applied Rheology for Industrial Chemists" will be conducted for the second year at Kent State University on June 27 through July 1, 1977. Lectures will be presented on eighteen subjects related to rheology, kinematics and dynamics, dispersion, interfacial and polymer rheology. Discussion will be divided equally between principles and application.

For additional details, contact C. J. Knauss, Department of Chemistry, Kent State University, Kent, Ohio 44242.

Rheologist Wanted:

There is an opening at \$28,000 for a rheologist who understands injection molding, to whom five technicians will report. Call Will Hart at Mainline Personnel (215-667-1820, collect).

Other Meetings:

A joint meeting of the British, Netherlands and Italian Societies of Rheology, Pisa, Italy, April 13-15, 1977, will be held at the Engineering College, Palazzo del Biennio, via Diotalvi.

The ladies' program includes a guided tour of Pisa on the morning of April 13 and a day-long trip to the Etrurian town of Volterra on April 15.

Polymer Processing Conference:

An International Conference on Polymer Processing is to be held at M.I.T. in August 1977. Further details available from Conference Chairman Nam P. Suh, MIT Industry Polymer Processing Program, Room 35-132, Cambridge, Massachusetts 02139.

SHORT COURSE ON RHEOLOGY

A short course on "Deformation and Fracture of Polymers", conducted by T. Smith, IBM, San Jose, California and S. S. Sternstein, RPI, Troy, New York, will be offered Saturday, February 26 and Sunday, February 27, 1977 at the Biltmore Hotel in New York.

The course is intended for people with little or no training in areas involving the phenomenological de-

scription of deformation and constitutive equations and the molecular and experimental aspects of the mechanical behavior of polymers.

The fee for the course and notes is \$100.00. Student rates are half. Further information may be obtained from Edward A. Collins, B. F. Goodrich Chemical Company, Avon Lake, Ohio 44012, Telephone: (216) 933-6181.

REGISTRATION FORM THE SOCIETY OF RHEOLOGY SHORT COURSE

Saturday/Sunday, February 26 & 27, 1977
Biltmore Hotel, Madison & 43rd St., New York

Name

Residence Address

Company Affiliation & Address

Phone Number: Work () Residence ()
(Area Code) (Area Code)

Date of Arrival

Mail to: E. A. Collins, B. F. Goodrich Chem. Co., Avon Lake, Ohio 44012

Application for Membership in the SOCIETY OF RHEOLOGY

I hereby desire to apply for membership in the SOCIETY OF RHEOLOGY dating from

January 19.....

Name
(Include Title, e.g., Mr., Dr., Prof., Miss, etc.) Please print.

Mail Address

Professional Connection

Position

Chief Interest

Highest Academic Degree

Date

Enclose Remittance of \$15 for Regular Annual Dues or \$100 for Sustaining Annual Dues and

Mail to:

SOCIETY OF RHEOLOGY
American Institute of Physics
335 East 45 Street
New York, New York 10017