

RHEOLOGY BULLETIN

Publication of The Society of Rheology, Inc.

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58th ANNUAL MEETING OCTOBER, 1986

Radisson-Excelsior Hotel
616 W. 7th Street
Tulsa, Oklahoma 74103
(918-589-8000)

OCT. 18 and 19: SHORT COURSE
OCT. 19-23: TECHNICAL MEETING

The program for the meeting is enclosed with this mailing. If there are questions, please contact the individuals in charge:

LOCAL ARRANGEMENTS

Chairman:

Peter E. Clark
Dep't of Chemical Engineering
University of Tulsa
600 South College
Tulsa, OK 84101
(918-592-2978)

PROGRAM

Chairman:

Frank E. Filisko
Materials & Met. Eng.
The Univ. of Michigan
Ann Arbor, MI 48109
(313-763-2240)

Co-Chairman:

Greg McKenna
Polymers Division
National Bureau of Standards
Gaithersburg, MD 20899
(301-921-3344)

INSTRUMENTATION EXHIBIT

Plans are underway for an exhibit of modern rheological instrumentation to accompany the October short course and technical meeting.

SHORT COURSE

A two-day short course entitled "Engineering And Processing Rheology: Characterization And Flow Of Rheologically-Complex Liquids" will be offered October 18 and 19 by M. M. Denn and D. V. Boger. A detailed description and a registration form are attached.

SOCIETY OF RHEOLOGY OFFICERS AND BOARD - 1986

President	R. F. Landel
Vice-President	J. M. Dealy
Secretary	D. G. Baird
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CHAIRMAN OF MEMBERSHIP	C. L. Sieglauff

1986 BINGHAM MEDALIST

The Bingham Medal for 1986 will be awarded to **Professor Morton M. Denn** of the University of California at Berkeley. Professor Denn was chosen for this honor from a very strong field of nine nominees.

Morton Denn began his professional career in 1964 as a Ph.D. graduate from the Department of Chemical Engineering at the University of Minnesota, where his dissertation was entitled "Optimization of Complex Systems". His subsequent interest in rheology and non-Newtonian fluid mechanics was sparked at Delaware, where he quickly discovered anisotropic fluids, the significance of the Deborah number and viscoelastic boundary-layers. Denn subsequently joined the Delaware faculty as Assistant Professor and rose rapidly through the ranks until he was named the Allan P. Colburn Professor in 1977. During this time he managed the noteworthy feat of developing an outstanding research reputation in both rheology and optimization and process control. Denn is currently Professor of Chemical Engineering at the University of California, Berkeley, where he moved in 1981, and is also director of the Program in Polymers and Polymer Composites, as part of the Center for Advanced Materials at the Lawrence Berkeley Laboratory.

Morton Denn's research accomplishments in rheology and non-Newtonian fluid mechanics cover a broad range of areas both of a very fundamental and of an applied nature. His most significant contributions have included numerous publications in three key areas:

- (1) Studies of the stability of flows of viscoelastic fluids.
- (2) Analysis of the melt spinning process of fiber formation.
- (3) Modeling of various polymer processing operations.

However, these three general topics do not come to summarizing the amazing scope and productivity of Professor Denn's research, which has also included forays into numerical computation, the foundations of rheological constitutive equations, the problem of "change of type" in the flow of viscoelastic fluids, and extensional flows.

However, the unique nature of Professor Denn's work, which most strongly swayed the opinion of the Bingham Medal Committee to overwhelming support for Denn's nomination, has been "the use of fundamental concepts in rheology and fluid mechanics for the understanding of practical processing behavior. Denn is first and foremost an engineer, who uses the tools at hand to solve engineering problems. Thus, his research includes a unique mix of physical theory, mathematical analysis, numerical computation, and experimentation. In his quest for solutions to problems of engineering significance, he has greatly enhanced our fundamental understanding of numerous areas of concern to rheologists, in many cases contributing the definitive papers. In the unique duality of his roles as engineer and rheologist, Morton Denn has made profound contributions both to the practice of polymer process engineering, and to the fundamental problems of rheology and non-Newtonian fluid mechanics." It is for these accomplishments that Professor Denn is honored as the 1986 Bingham Medalist of the Society of Rheology.

COMMENTS ON THE FINANCIAL STATUS OF THE SOCIETY

Our Society is undergoing a rapid and fairly major change in its expenses. This is primarily due to the expanded size of the Journal and the new contract with John Wiley and Sons which was negotiated in 1985. The expanded size of the Journal enables us to compete more effectively as a principal publisher of rheological

RHEOLOGY BULLETIN
 Arthur B. Metzner, *Editor*
 Center for Composite Materials
 University of Delaware
 Newark, DE 19716
 302-451-2328

papers; it provides members with a more comprehensive publication service and it enables a decreased time lag between submission of a manuscript and its appearance in published form - all, of course, at increased cost. And the new contract, representing the first change in more than a dozen years, is a realistic reflection of changes in publication costs over this period.

In view of all of this the Executive Committee will be considering a change in membership dues at its next meeting (in Tulsa). Proposals have been received for changing the dues to either \$30. or \$35. for Regular Members with a corresponding change for Sustaining Members, beginning in 1988. If either of these proposals were adopted we might still remain a "bargain" society, with dues far below those of most other professional organizations. However, any such change would certainly be non-trivial and members may well wish to have their views heard. It will help us to formulate appropriate plans if as many opinions as possible were expressed to members of the executive committee prior to the October meeting.

WINTER MEETING

The Society of Rheology will hold a winter meeting in Santa Monica, California on January 18-21. The program of papers, registration and housing information will be provided in a mailing to all members in late November; at this time it seems likely that the mailing will not include full abstracts but, if so, these will be available at the meeting.

The Local Arrangements Chairman is:
 Yoram Cohen
 Chemical Engineering Department
 University of California
 Los Angeles, CA 90024
 Phone: 213-825-8766

The Technical Program Chairman is:
 John J. Aklonis
 Loker Hydrocarbon Research Institute
 University of Southern California
 Los Angeles, CA 90089
 Phone: 213-743-2793

Individuals wishing to submit papers for inclusion in the meeting program are requested to submit abstracts on the form attached, in camera-ready format, **prior to October 15**, to Prof. Aklonis with a copy to the appropriate symposium chairman. Please contact the symposium chairman at as early a date as possible, however, so that the overall planning can proceed before October 15. Symposia being planned at this time, and their chairmen, are as follows:

1. *New Frontiers in Elongational Rheology*
 S.J.A. Armour
 Defence Research Establishment Suffield
 Ralston, Alberta TOJ 2N0, Canada
 Phone: 403-544-3701, Ext. 4634
2. *Rheology of Material Failure*
 J. L. Goddard
 Chemical Engineering Department
 University of Southern California
 Los Angeles, CA 90089
 Phone: 213-743-7051
3. *Rheology of Solutions*
 Eric J. Amis
 Chemistry Department
 University of Southern California
 Los Angeles, CA 90089
 Phone: 213-743-6913

4. *Molecular Interpretations of Polymer Dynamics*
 R. H. Colby
 Eastman Kodak Research Lab.
 1669 Lake Avenue
 Rochester, NY 14650
 Phone: 716-477-5031
5. *The Role of Rheology in Lubrication*
 W. O. Winer
 School of Mechanical Engineering
 Georgia Institute of Technology
 Atlanta, GA 30332
 Phone: 404-894-3270
6. *Rheology of Sealants and Adhesives (tentative)*
 D. Hoffman
 Fasson Corporation
 250 Thester Street
 Painesville, OH 44077
 Phone: 216-352-4444
7. *Food Rheology*
 M.A. Tung
 Food Science Department
 University of British Columbia
 Vancouver, B.C. V6T 2A2, Canada
 Phone: 604-228-4425
8. *Viscoelastic Properties of Unimolecular Films*
 J. Mann
 Department of Chemical Engineering
 Case Western Reserve
 University Circle
 Cleveland, OH 44106
 Phone: 216-368-4150
9. *General Sessions*
 J. J. Aklonis

Additional symposia can be added if members wish to do so. Contact Prof. Aklonis.

ANNOUNCEMENTS

XTH INTERNATIONAL CONGRESS ON RHEOLOGY 14-20 AUGUST, 1988, SYDNEY, AUSTRALIA

The Xth International Congress on Rheology will be held on the campus of The University of Sydney, 14-20 August, 1988. Hotel and student dormitory accommodation will both be available; pre-and post-congress tours are being planned. 1988 is Australia's Bicentennial year, so the organizing committee will welcome an early response to requests for intentions to attend and/or present a paper. Information about the Congress can be had from the chairman: Professor Roger I. Tanner, Department of Mechanical Engineering, University of Sydney, Sydney, N.S.W. 2006, Australia.

Australia.

Information on future local meetings may be obtained from officers of the Australian Society of Rheology:

President:

Dr. Sati N. Bhattacharya, Department of Chemical Engineering, R.M.I.T., La Trobe Street, Melbourne, 3000.

Vice President:

Dr. C. Tiu, Department of Chemical Engineering, Monash University, Wellington Road, Melbourne.

Secretary:

Mr. Paul Clare, Applied Chemicals Pty. Ltd., 2 Domville Avenue, Hawthorn 3122

Treasurer:

Dr. Y. L. Yeow, Department of Chemical Engineering, University of Melbourne, Parkville, Victoria, 3052.

Britain.

The British Society of Rheology is holding a conference on DEFORMATION IN SOLID POLYMERS at Leeds University on September 9-11, 1986. Further information is available from:
 Mr. S.T.E. Aldhouse
 BP Chemicals Ltd.
 Research and Development Department
 Bo'ness Road
 Grangemouth
 Stirlingshire FK3 9XH

SHORT COURSE
ENGINEERING AND PROCESSING RHEOLOGY:
CHARACTERIZATION AND FLOW OF
RHEOLOGICALLY-COMPLEX LIQUIDS

by Morton M. Denn
University of California, Berkeley
and
David V. Boger
University of Melbourne
Dates: October 18 and 19

Course Description

Technological applications often require the pumping and processing of rheologically-complex liquids such as particle suspensions, high-wax crude oils, polymer solutions and melts, etc. The characterization of such materials for engineering design and scaleup and quality control requires the measurement of flow properties not encountered in the flow of low molecular weight, homogeneous liquids. This course will provide an introduction to the significance and measurement of material properties of rheologically-complex liquids and will illustrate their use in engineering analysis. The course will stress physical understanding in a framework requiring minimum mathematics, and will conclude with applications from the experience of the speakers. The latter will include examples from polymer processing, mineral processing, and coal and crude oil transportation.

The lecturers are the co-authors of a forthcoming book, which will be provided in draft form as notes. They inaugurated this course in 1985 under the sponsorship of the Australian Rheology Society and the Polymer Division, Royal Australian Chemical Institute. Morton Denn is Professor of Chemical Engineering at the University of California, Berkeley, and Program Leader for Polymers and Polymer Composites in the Center for Advanced Materials at Lawrence Berkeley Laboratory. His professional recognition includes election to the National Academy of Engineering. David Boger is the Professor of Chemical Engineering at the University of

Melbourne. His professional recognition includes receipt of the 1984 Annual Award of the British Society of Rheology.

Prerequisites

The presentation will be introductory in nature. The subject is inherently quantitative, but every effort has been made to replace mathematical rigor with physical reasoning and interpretation of experiments. Participants who have completed a bachelor's degree in science or engineering should have little difficulty with the material.

COURSE OUTLINE

The topics to be included are:

- Introduction to Rheologically-Complex Materials
- Viscosity
- Capillary and Pipe Flow
- Logic of Solving Flow Problems
- Viscoelastic Liquids
- Classical Rheometry
- Stress Constitutive Equations (Introduction)
- Non-Classical Rheometry
- Flow in Non-Simple Geometries
- Applications to be considered are extrusion and breakup of polymer filaments and films, the handling of dense suspensions and the transport of waxy crude oils

Fees and Registration.

A registration form is enclosed with this mailing.

Fee for the course and lecture is \$250.00 to be received prior to September 15, 1986. After September 15 the fee will be \$275.00. Student rates will be half of the above; checks should be made payable to "The Society of Rheology" and sent with the registration form to E. A. Collins, Treasurer.

Further information can be obtained from E. A. Collins, 216-946-3130.

Lodging should be arranged separately with the Radisson-Excelsior Hotel. Please mention the Society when reserving rooms.

REGISTRATION FORM

Saturday/Sunday, October 18 and 19, 1986
Tulsa Radisson-Excelsior Hotel
616 West Seventh
Tulsa, OK 74127
(918) 587-8000

NAME _____

RESIDENCE ADDRESS _____

COMPANY AFFILIATION _____

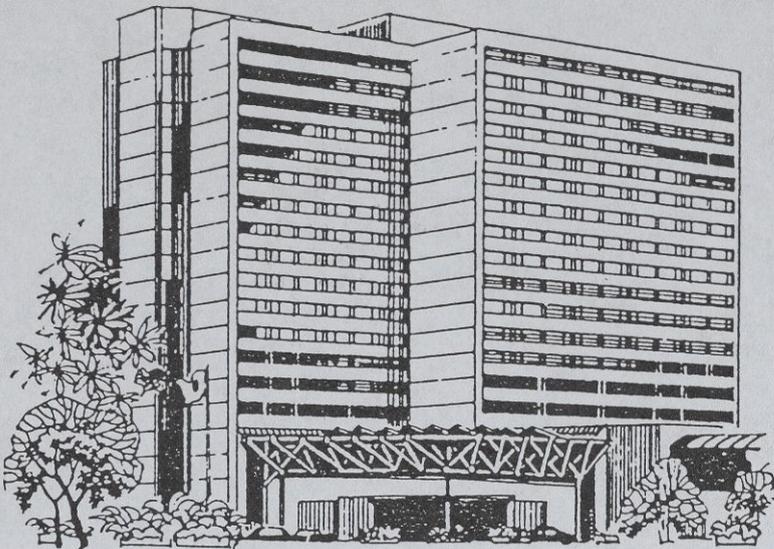
ADDRESS _____

BUSINESS PHONE NUMBER () _____

RESIDENCE PHONE NUMBER () _____

DATE OF ARRIVAL _____

Please return this registration form together with payment to:
Dr. Edward A. Collins
Mitech Corporation
4399 Hamann Parkway
Willoughby, Ohio 44094



EXCELSIOR HOTEL

A LINCOLN HOTEL

616 West Seventh, Tulsa, Oklahoma 74127

587-8000

ORGANIZATION SOCIETY OF RHEOLOGY

FUNCTION ANNUAL MEETING DATES OCTOBER 17-23, 1986

ALL REQUESTS FOR THE ABOVE GROUP MUST BE RECEIVED BY OCTOBER 3, 1986

Please reserve accommodations for *		Print or Type
NAME _____		COMPANY _____
ADDRESS _____		
CITY _____		STATE _____ ZIP CODE _____
SHARING ROOM WITH _____		NO. OF PERSONS _____
SIGNATURE _____		PHONE NUMBER _____

MONTH	DAY	YEAR	ARRIVAL TIME	MONTH	DAY	YEAR	CHECK IN TIME	3:00 PM
ARRIVAL DATE				DEPARTURE DATE			CHECK OUT TIME	12:00 PM

ACCOMMODATIONS WILL NOT BE CONFIRMED WITHOUT A CHECK FOR THE 1st NIGHT'S DEPOSIT OR USE YOUR AMEX OR DINERS CLUB CREDIT CARD # TO GUARANTEE YOUR RESERVATION. YOU WILL BE CHARGED FOR THE 1st NIGHT IF RESERVATIONS ARE NOT CANCELLED 48 HOURS PRIOR TO ARRIVAL.

CREDIT CARD # _____ AMEX DINERS CLUB VISA MASTERCARD EXPIRATION DATE _____
(PLEASE CHECK ONE)

PLEASE CHECK PREFERRED ACCOMMODATIONS		
ACCOMODATION	PERSONS	RATES
KING ROOM	<input type="checkbox"/> ONE <input type="checkbox"/> TWO	\$55.00
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JR SUITE		\$100.00
PARLOR W/KING BED	<input type="checkbox"/> ONE <input type="checkbox"/> TWO	
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IF RATE REQUESTED IS NOT AVAILABLE, NEAREST AVAILABLE RATE WILL BE ASSIGNED. THERE IS AN ADDITIONAL \$12.00 CHARGE FOR THE THIRD OR FOURTH OCCUPANT IN EACH ROOM. RATES ARE SUBJECT TO APPLICABLE TAXES. NO CHARGE FOR CHILDREN UNDER 18 OCCUPYING THE SAME ROOM AS PARENTS.

There will also be a meeting on RHEOLOGY OF DISPERSIONS AND PARTICULATE SOLIDS in April, 1987. Further information may be obtained from the honorary secretary:

Dr. J. J. Benbow
Department of Chemical Engineering
University of Birmingham
P.O. Box 363
Birmingham, B15 2TT

The Colloid & Interface Science Group of the Faraday Division of the Royal Society of Chemistry and the Colloid and Surface Science Committee of the Society of Chemical Industry are organizing a joint one-day meeting on:

INTERFACIAL RHEOLOGY

at Imperial College on 19th December, 1986. The topic will be the rheology of the fluid/fluid interface.

Full details and registration forms are available from:

Dr. B. J. Briscoe
Dept. of Chemical Engineering and Chemical Technology
Imperial College
Prince Consort Road
LONDON SW7 2AY

Canada.

The Canadian Rheology Group is contributing three symposia at the annual meeting of the Canadian Society of Chemical Engineering in Sarnia in October, 1986. Contact the Group chairman:

Dr. L. A. Utracki
NRC, Industrial Materials Research Institute
75 de Mortagne Blvd.
Boucherville, Quebec
Canada J4B 6Y4

China.

The officers of the Chinese Society of Rheology are:

President: C. F. Chan Man Fong (Peking University)

Vice-President: Yuan Longwei (Xiangtan University)

Secretary: Xu Yuanze (Institute of Chemistry)

The address of the Secretariat is:

Dr. XU Yuanze, Institute of Chemistry,
Academia Sinica, P.O. Box 2709, Beijing, P. R. China.

France.

The Groupe Francais de Rheologie has scheduled its 21st Annual National Colloquium on the subject RHEOLOGIE DES FLUIDES HETEROGENES for November 26-28 in Strasbourg. There will be sessions on suspensions, emulsions, gas-solid systems and on suspensions having deformable particles. Further information is available from:

Monsieur Olivier Scrivener
Institut de Mecanique des Fluides
2, rue Boussingault
67083 Strasbourg Cedex

The Societe Francaise de Chimie will include a symposium on RHEOLOGY OF COMPLEX FLUIDS at its "FORMULA FORUM" February 4-6, 1987, in Nice. Contact:

P. Fillet, Secretaire General
Societe Francaise de Chimie
250, rue Saint-Jacques
75005 Paris, France

The International Union of Theoretical and Applied Mechanics will hold a meeting in Grenoble, August 21-28, 1988. See the June issue of Journal of Rheology for details (p.692).

Germany.

The 31st IUPAC Macromolecular Symposium will be held June 30-July 4, 1987, in Merseburg. The scientific chairman is Professor Dr. Burkart Phillipp whose mailing address is:

Dr. Burkart Philipp
Technische Hochschule, "Carl Schorlemmer"
Leuna-Merseburg
Macro 87
Otto-Nuschke-Strasse
DDR - 4200 Merseburg, German Democratic Republic

Japan.

The 34th Rheology Symposium of The Society of Rheology, Japan will take place October 30-Nov. 1, 1986, in Matsue.

Contact:

Dr. Toshiro Masuda
Department of Polymer Chemistry
Kyoto University
Kyoto 606, Japan

United States.

The fourth International Conference on Reactive Processing will be held at The University of Akron on October 29-31, 1986. Contact the meeting chairman.

Prof. J. L. White
Center for Polymer Engineering
University of Akron
Akron, OH 44325

The 13th Biennial Polymer Symposium of the Division of Polymer Chemistry, American Chemical Society, will be held in Boca Raton, Florida, on November 23-26, 1986. Contact:

Dr. Frank W. Harris
Department of Polymer Science
University of Akron
Akron, OH 44325

The American Society of Mechanical Engineers and the American Society of Lubrication Engineers have scheduled a Tribology Conference for October 20-22, 1986 in Pittsburgh. Contact:

Prof. T.A. Dow
Box 7910
Mechanical Engineering Department
North Carolina State University
Raleigh, NC 27695

LAST MINUTE INFORMATION ON OCTOBER MEETING:

The Radisson - Excelsior Hotel operates a free shuttle service from the Tulsa airport. Call from the airport.

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 _____
(Please print)

Mail Address _____

Professional Affiliation _____

Position _____

Please indicate in the boxes
provided below the code letter
from the list to the right, which
best describes your areas of
interest in order of decreasing
importance.

- PRIMARY
- SECONDARY
- TERTIARY

INTEREST AREA	CODE
Biological Materials	A
Foods and Natural Products	B
Inorganic Materials	C
Oils and Lubricants	D
Soils	E
Synthetic Polymers	F
Fluids (Including Solutions)	G
Solids	H
Suspension and Particulate Systems	J
Engineering	K
Experimental Techniques	L
Mechanics	M
Phenomenology	N
All of the above	Y
None of the above	Z

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personal use, and not for library use.

Signature

Date

Enclose remittance of \$20 for Regular Annual Dues or \$200 for Sustaining Annual Dues and
mail to:

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335 East 45th Street
New York, New York 10017