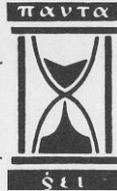


# RHEOLOGY BULLETIN

Published by The Society of Rheology

Vol. 63 No. 2



July 1994

## THE SOCIETY OF RHEOLOGY EXECUTIVE COMMITTEE - 1993-95

President . . . . .	Robert C. Armstrong
Vice President . . . . .	Kurt F. Wissbrun
Secretary . . . . .	Andrew M. Kraynik
Treasurer . . . . .	Edward A. Collins
Editor . . . . .	Arthur B. Metzner
Past President . . . . .	Joe D. Goddard
Members-at-Large . . . . .	Ronald G. Larson William B. Russel

## 66th ANNUAL MEETING PHILADELPHIA OCTOBER 2-6, 1994

The annual meeting of the Society of Rheology will be held at the Hotel Atop the Bellevue in Philadelphia. The meeting organizers are:

### Technical Program Chair:

Antony Beris  
Department of Chemical Engineering  
University of Delaware  
Newark, DE 19716  
(302) 831-8018, Fax: (302) 831-1048  
Email: beris@che.udel.edu

### Local Arrangements Chair:

Norman Wagner  
Department of Chemical Engineering  
University of Delaware  
Newark, DE 19716  
(302) 831-8079, Fax: (302) 831-1048  
Email: wagner@che.udel.edu

## COMMITTEES

### Membership:

A. J. Giacomin, chair  
T. C. Jordan  
J. A. Kornfield  
W. E. VanArsdale  
P. Moldenaers

### Education:

P. E. Clark, chair  
M. M. Denn  
B. Hartmann  
E. A. Collins  
M. T. Shaw

### Meetings Policy:

Kurt F. Wissbrun, chair  
R. G. Larson  
W. B. Russel  
A. N. Beris  
N. J. Wagner  
A. M. Kraynik

### Bingham Award:

W. H. Tuminello, chair  
P. J. Carreau  
S. Kim  
W. R. Schowalter  
E. Helfand  
K. R. Rajagopal  
R. L. Powell

## Nominations for the 1995 Bingham Medal

Nominations should be submitted before **January 15, 1995** to the next chair of the Bingham Award Committee:

Prof. Sangtae Kim  
Department of Chemical Engineering  
University of Wisconsin  
1415 Johnson Drive  
Madison, WI 53706-1691  
(608) 262-5921; Fax: (608) 262-0832  
Email: kim@chewi.che.wisc.edu

Revised rules and guidelines for the Bingham Award are contained in this Bulletin.

**RHEOLOGY SHORT COURSE** A two-day short course on *Optical Rheometry: Optical Methods for Structure and Dynamics* will be taught in Philadelphia, October 1-2, by Prof. Gerald G. Fuller from Stanford University. A course description and registration information are enclosed.

**POSTER SESSION** A Poster Session "Recent Research Communications" will be held in Philadelphia. See the enclosed flyer for details.

**INSTRUMENT EXHIBIT** Several companies will exhibit rheological instrumentation at the annual meeting.

## ANDREAS ACRIVOS 1994 BINGHAM MEDALIST

The Bingham Medal for 1994 will be awarded to Andreas Acrivos, Einstein Professor of Science and Engineering at the City College of the City University of New York. This award is given in recognition of outstanding scientific and educational contributions to the fields of rheology and fluid mechanics.

---

RHEOLOGY BULLETIN  
Andrew M. Kraynik, Editor  
Department 1512  
Sandia National Laboratories  
Albuquerque, New Mexico 87185-0834  
(505) 844-9696  
(505) 844-9132 (Secretary)  
Fax: (505) 844-8251  
Email: amkrayn@sandia.gov

---

Acrivos received his Bachelors Degree from Syracuse University and M.S. and Ph.D. degrees from the University of Minnesota, all in Chemical Engineering. In 1954 he was appointed Assistant Professor at the University of California. He attained the rank of Professor in 1959. In 1962 he accepted a position at Stanford University where he remained for 26 years. During his stay at Stanford, he was the Chemical Engineering Department Chairman from 1972 to 1975. In 1988 he moved to New York to accept his current position. He is also the editor of *Physics of Fluids A*, in which capacity he has substantially reoriented the journal so that it now contains many papers of fundamental interest to rheologists.

Professor Acrivos has spent most of his career studying the properties of particulate systems: suspensions, emulsions, and fiber-filled systems. Along with Howard Brenner and George Batchelor, he is largely responsible for the modern focus on the interactions between the microstructure of these materials and their flow properties. His papers, coauthored with Frankel, on concentrated suspensions are among the most oft-cited works in the literature of these systems. But it is his collection of papers that combine experimentation and theory on the structure of dense suspensions subject to shear-induced self-diffusion that have the most recent and far-reaching effect. This series of contributions begin with the experimental observations with his student, F. Gadala-Maria, and conclude with the theoretical explanation developed in collaboration with D. Leighton. This work is not only critical to the conduct of proper experimentation with dense suspensions, but has also laid the ground work for theoretical modeling.

Acrivos has also devoted considerable effort to studies of the microhydrodynamics of single or multiple particles or drops in flow fields. In this area, his work of greatest importance and rheological significance is the extensive series of fundamental studies of drop formation and breakup that originated with his study of the rheology of dilute emulsions (with Frankel).

His role as a mentor to researchers in rheology is most notable, and he has single-handedly populated the Society of Rheology with many of its most productive members. The list is very impressive and includes J. Goddard, G. Leal, D. Barthes-Biesel, W. Russel, J. Brady, D. Leighton, and E. Shaqfeh. The session on "Rheology of Suspensions, Dispersions, and Foams", at the Sante Fe Meeting was dominated by Prof. Acrivos' academic children, grandchildren and even a great grandchild. Over 40% of all the papers were either authored or coauthored by one of his progeny. His list

of descendants is a "who's who" in suspension rheology, and several have had a substantial impact in other areas of rheology as well.

Professor Acrivos has over 161 publications to his name and has received 23 honors and awards during his illustrious career. The Society of Rheology is proud to add the 1994 Bingham medal to this already impressive list of accomplishments. The Bingham medal will be presented to Professor Acrivos at the Awards Banquet at the Philadelphia Meeting on October 2.

### 1994 Journal of Rheology Publication Award

Savvas G. Hatzikiriakos and John M. Dealy have been selected to receive the first Journal of Rheology Publication Award. Their work encompasses two closely related papers. The first is "Wall Slip of Molten High Density Polyethylenes. II. Capillary Rheometer Studies," *J. Rheol.*, 36, 703-741 (1992); and the second, "Role of Slip and Fracture in the Oscillating Flow of HDPE in a Capillary," *J. Rheol.*, 36 845-884 (1992). The first paper sets the background for the second, which combines inventive genius, meticulous analysis, numerical work and experimental study. The citation for this work notes that "these ... excellent papers combine all of the published criteria for the award. The authors have addressed an important polymer melt flow phenomenon, the mechanism for which has been the subject of extensive controversy for some time, and have performed definitive experimentation and analysis. The exposition in their papers is well written and clear. Perhaps equally important, here they have addressed an important industrial rheology problem and provided solid theoretical and experimental guideposts which can immediately be exploited by producers and users of HDPE (and other important plastics that exhibit similar behavior). This cannot be said of many otherwise excellent papers."

The award, which is sponsored by TA Instruments, will be presented at the Awards Banquet in Philadelphia on October 2.

### Rheology Short Courses

The first Short Course offered by the Society of Rheology was held in conjunction with the 42nd Annual Meeting, in Knoxville, Tennessee, October 1971. The twenty-first Short Course will be offered at the Annual Meeting in Philadelphia.

The Education Committee selects Short Course topics on the basis of interest, current awareness, and availability of outstanding instructors. The Committee is asking the membership to suggest topics and instructors for future consideration. Suggestions can be submitted to any member of the Education Committee: Peter Clark (Chair), Morton Denn, Bruce Hartmann, Monty Shaw, and Ed Collins.

Topics being considered for the Annual Meeting in Sacramento, October 1995, include: "Flow Visualization," "New Rheological Measurement Techniques," "Reactive Processing," and "Computational Aspects of Flow Design."

The Education Committee welcomes ideas regarding other education activities that would be of general interest to members of the Society and the scientific community.

## Student-Member Travel Grants Available for Philadelphia

The Society of Rheology is again offering grants to support the cost of public transportation to the annual meeting to any second or third year graduate student who is a member of the Society as of July 1, 1994, and whose faculty advisor is also a member as of that date. Each grant will be a maximum of \$350, available on a first-come, first-served, basis, until available funds are exhausted. To apply, the student should write a letter requesting the grant. The student's faculty advisor should add a letter of support, certifying that both the advisor and the student are members of the Society of Rheology, and that the student is a second or third year graduate student. Only one application per faculty advisor will be accepted. The letters from the student and the advisor should be mailed in the same envelope **before September 1, 1994** to:

Ronald G. Larson  
AT&T Bell-Laboratories, Rm GE-320  
600 Mountain Ave.  
Murray Hill, NJ 07974-0636  
(908) 582-6158, Fax: (908) 582-5570  
Email: rgl@likewise.att.com

**Reminder: Page charges for the Journal of Rheology have been dropped.**

### MINUTES OF THE EXECUTIVE COMMITTEE MEETING March 13, 1994

The Executive Committee Meeting was called to order at 9:00 a.m. on March 13, 1994 at Princeton University. Executive Committee members in attendance included: Bob Armstrong, Kurt Wissbrun, Art Metzner, Ed Collins, Joe Goddard, Bill Russel, and Andy Kraynik.

The minutes of the October 17, 1993 Executive Committee Meeting, which appeared in the January 1994 Rheology Bulletin, were corrected to read that Joe Goddard had submitted a draft of a letter to sustaining members.

Most of the morning was devoted to long-range planning. Kurt Wissbrun led discussion on meeting activities: short courses, workshops, tutorials, and joint meetings with other societies. Concerning publications, Art Metzner suggested enhancing our use of Physics Today to promote Society activities. We discussed electronic publishing of the Journal of Rheology, establishing a position of Associate Editor, and expanding the Rheology Bulletin, e.g. to include advertising currently published in the Journal of Rheology. Armstrong and Metzner will report to the Executive Committee with suggestions for the Rheology Bulletin. Ed Collins, focusing on education issues, expanded on the idea of tutorials at Society meetings; an "Introduction to Rheology" might also be provided in video format. The Education Committee will study these issues and present a proposal to the Executive Committee. Discussion of awards, led by Andy Kraynik, resulted in agreement that nominations for the Bingham Award should consist of a two-page summary, four supporting letters,

and a curriculum vitae. Ed Collins discussed society resources and financial projections. Relating to governance structure of the Society, Joe Goddard suggested that we should create a transition process for the offices of treasurer, editor, and secretary to assist newly elected officers.

Ed Collins gave the Treasurer's report and indicated that the Society would seek higher income from reserve funds being held by the American Institute of Physics.

The Executive Committee approved travel allowances for two invited speakers at the Philadelphia Meeting. Houston and San Diego are being considered as possible venues for the 1997 Winter Meeting.

In the Editor's report, Art Metzner indicated that he would like to step down as Editor by June 1995. It was agreed that the non-member subscription fee for the Journal of Rheology will be increased to \$375. Twenty five free reprints will be provided to the main author of each Journal article.

The meeting was adjourned at 4:30 p.m.

### Annual Meeting Timing?

Some members have expressed interest in moving the annual meeting from October to some time period in the Spring. The Executive Committee welcomes your opinion on this matter.

### Tasos Papanastasiou 1953-1994

The rheological community is deeply saddened by the untimely passing on March 14, 1994 of Professor Tasos Papanastasiou in Thessaloniki, Greece. Those of us who knew Tasos as a colleague and friend will miss his fine mind and his straightforward character and nature.

Professor Papanastasiou obtained a Diploma in Chemical Engineering from the National Technical University of Athens, Greece, an M.Sc. degree in the area of environmental engineering and a Ph.D. degree in Chemical Engineering from the University of Minnesota. He was an Assistant Professor in the Department of Chemical Engineering at the University of Michigan (1985-1992) and an Associate Professor at the Aristotle University of Thessaloniki (1992-1994). He was an author on over forty research papers on rheology and related areas. He developed a constitutive equation of the K-BKZ type (the Papanastasiou-Scriven-Macosko equation) that has been used extensively. Tasos was the author of two recent books: *Applied Fluid Mechanics*, and *Intermediate Fluid Mechanics*.

Tasos Papanastasiou is survived by his wife Androula and two sons.

### Rules to Govern the Bingham Medal Award

The E.C. Bingham Medal shall be awarded, usually on an annual basis but in any event not more often, at the Annual Meeting of The Society of Rheology. The Medal may be awarded to any individual who has made outstanding contributions to the science of rheology, provided that he or she has not previously received the award and is a resident of one of the countries of North America. It is not necessary that

the recipient be a citizen of his or her country of residence or a member of The Society of Rheology. There is no restriction as to age of the recipient.

The Bingham Medalist shall be chosen in the following manner. A Bingham Award Committee shall be appointed by the President in conformity with the rules of The Society. The Committee will consist of seven members, each serving a three-year term, and they shall be appointed in a 2, 2, 3-year cycle. The Bingham Award Committee shall consider, in any manner consistent with procedures established by the Executive Committee, all nominations submitted by any member of The Society. At a designated time, usually by April 1 and prior to any Spring Executive Committee meeting, the Chairman of The Bingham Award Committee shall convey its decision to the President and the Secretary of The Society. The President in turn shall transmit the decision to the Executive Committee for action. The official announcement of the award shall be made by the Secretary in advance of actual presentation, preferably in the Summer Bulletin.

### Guidelines for the Bingham Award Committee

1. A call for nominations, with stated January 15 deadline, shall be published in the regular Bulletin of The Society of Rheology prior to the normal Fall date of the annual meeting.
2. Nominations shall include the following information about the nominee in the form of a two-page summary:
  - a. A brief scientific biography.
  - b. A review of those accomplishments upon which the nomination is based.
  - c. A concise evaluation of the importance of the nominee's contributions in advancing the science of rheology.
3. The nomination must also include:
  - a. A curriculum vitae with publication list.
  - b. Supporting letters (no more than 4) from other rheologists that address the nominee's contributions.
4. The Bingham Award Committee should meet at least once, in person or by teleconference, prior to its final decision.
5. Except in special circumstances, the contributions for which the award is granted shall have been made during the ten years preceding the award.
6. The President, Past President, and members of the Bingham Award Committee shall not be eligible to receive the Award during their terms of office.
7. The decision of the Bingham Award Committee must be by (simple) majority vote of its members (including its chairman).
8. The Chairman of the Bingham Award Committee should record and communicate the results of the vote to the committee members.
9. The decision of the Bingham Award Committee shall be submitted to the President and the Secretary at least by April 1 of the year preceding the normal Fall annual meeting. It shall be accompanied by the two-page summary in item 2 above.
10. If the Bingham Award Committee is unable to arrive at

a majority decision, its chairman shall submit to the Executive Committee for its decision the dossiers of those nominees receiving the most support.

11. If the Executive Committee fails to ratify a decision of the Bingham Award Committee, or fails to choose from the dossiers forwarded, then no award shall be given for that year.

12. After its final decision, The Bingham Award Committee shall classify the rejected nominations into three categories:

- a. Those to be reconsidered for the next Bingham Award.
- b. Those to be returned to the nominators for revision and updating.
- c. Those to be retired from consideration.

The Chairman shall notify each nominator of the classification assigned to his or her nomination.

### Meeting Announcements

- August 1-5, 1994: MIT Short Course on Industrial Rheology for Scientists and Engineers. Contact: F. J. McGarry, Office of the Summer Session, Room E19-356, MIT, Cambridge, MA 02139, (617) 253-2101, Fax: 253-8042, Email: summer-professional-programs@mit.edu
- August 8-12, 1994: 19th Annual Short Course on Rheological Measurements, Minneapolis, MN. Contact: Professional Development and Conference Center, U. Minnesota, 214 Nolte Center, 315 Pillsbury Dr. S.E., Minneapolis, MN 55455-0139.
- September 4-9, 1994: 4th European Rheology Conference, Seville, Spain. Contact: Prof. C. Gallegos, Departamento de Ingenieria Quimica, Universidad de Sevilla (Edificio de Quimica) 41071 Seville, Spain, 34-5-462 44 06, Fax: 34-5-462 49 52.
- September 26-30, 1994: Pacific Conference on Rheology and Polymer Processing, Kyoto, Japan. Contact: Secretariat-PCR '94, Research Center for Biomedical Engineering, Kyoto University, Kyoto 606-01, Japan, Fax: +81 (75) 751-4141.
- September 26 - October 8, 1994: NATO Advanced Study Institute on "Rheological Fundamentals of Polymer Processing", Algarve, Portugal. Contact: J. A. Covas, University of Minho, Braga, Portugal, Fax: 351-53-604450 / 616936.
- November 13-18, 1994: Symposium on "Material Instabilities", ASME Winter Annual Meeting, Chicago, IL. Contact: Prof. R. C. Batra, Dept. Mechanical Eng., U. Missouri-Rolla, Rolla, MO 65401-0249, (314) 341-4589, Fax: (314) 341-4607.
- November 13-18, 1994: Symposia on "Electrorheological Flows II" and "Developments in Non-Newtonian Flows", ASME Winter Annual Meeting, Chicago, IL. Contact: Prof. Dennis A. Siginer, Dept. Mechanical Eng., Auburn U., Auburn, AL 36849-5341, (205) 844-3331, Fax: (205) 844-3307, Email: dsiginer@eng.auburn.edu.
- February 19-22, 1995: 18th Annual Meeting of the Adhesion Society, Hilton Head Island, SC. Contact: J. W. Holubka, Ford Motor Company, Ford Research Company, MD 3198 SRL, PO Box 2053, Dearborn, MI 48121, (313) 323-1439, Fax: (313) 337-5581, Email: holubka@email.srl.ford.com

*The Society of Rheology 66th Annual Meeting  
October 2-6, 1994  
Hotel Atop the Bellevue  
Philadelphia, Pennsylvania*

**REGISTRATION FORM**

Name \_\_\_\_\_  
(Please type or print)

Name as you would like it to appear on badge if different from above: \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State or Province \_\_\_\_\_

Zip or Postal Code \_\_\_\_\_ Country \_\_\_\_\_

Telephone \_\_\_\_\_ FAX \_\_\_\_\_

Electronic Mail Address \_\_\_\_\_

**Registration Prior to September 1:**

Full Conference Member	\$ 95*	_____
Non-Member	\$ 135*‡	_____
Student	\$ 30*	_____
Retired Member	\$ 30*	_____
Banquet Ticket	\$ 30	_____

**Late Registration:**

\$ 115
\$ 155
\$ 30
\$ 30

Total Enclosed: \_\_\_\_\_

\* Includes \$5 allocated for the Society lunch on Monday, October 3, at 12:00.

‡ Allows for a 1 year membership if desired. I elect to join the Society of Rheology at this time (sign below):

\_\_\_\_\_

Please indicate your attendance at the Banquet on this form; the registration fee does not include this event. Note, the number of Banquet tickets are limited, so please reserve your ticket at this time.

Please indicate whether you will bring along a person interested in the accompanying persons program .

**Refunds:** Cancellations received in writing by September 14 will be subject to a \$25 administrative charge. No refunds will be granted after that date; substitutions will be accepted until Friday, September 23.

**Method of Payment:**  Check or Money Order made payable to University of Delaware is enclosed.  
Credit Card:  Mastercard  Visa or  Discover (Please check correct card.)

Account Number \_\_\_\_\_

Expiration Date \_\_\_\_\_ Cardholder Name \_\_\_\_\_

Signature (Required for credit card transactions).

Your registration will be confirmed upon receipt. **Forms with credit card information may be faxed to (302) 831-3009. Return completed form and payment to:**

University of Delaware  
Department of Chemical Engineering  
Newark, DE 19716  
Attention: Debbie Cook

*The Society of Rheology 66th Annual Meeting  
October 2-6, 1994  
Hotel Atop the Bellevue  
Philadelphia, Pennsylvania*

**HOTEL RESERVATION FORM**

Name \_\_\_\_\_  
(Please type or print)

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State or Province \_\_\_\_\_ Zip Code \_\_\_\_\_

Country \_\_\_\_\_ Telephone \_\_\_\_\_ FAX \_\_\_\_\_

Arrival Date/Time \_\_\_\_\_ AM/PM Departure Date/Time \_\_\_\_\_ AM/PM

Check-in time is 3:00 P.M. Check-out time is 12:00 noon. When sharing accommodations, please submit only one form to avoid duplication.

Your reservation will be held until 6:00 P.M. unless guaranteed by a deposit of one night's room and tax or by a major credit card. If you do not cancel your reservation by 6:00 P.M. on the day of arrival, you will forfeit your deposit or the first night's room and tax will be charged to your credit card.

- Single Room at \$120 per night.       Double Room at \$120 per night.  
(Note that the number of double rooms is very limited.)

Name of Persons Sharing Accommodations

\_\_\_\_\_  
\_\_\_\_\_

- Check or Money Order payable to "Hotel Atop the Bellevue"  
 Credit card:     Mastercard                       Visa                       American Express

Account Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

Cardholder's Name \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature

**Return form by September 1, 1994 to:** Hotel Atop the Bellevue  
1415 Chancellor Court  
Philadelphia, PA 19102  
Attention: Jyl Buzas

Reservations may be made via telephone or FAX by calling: 215-893-1776 or 1-800-221-0833 or FAX: 215-893-9868. If paying by check, please send it directly to Jyl Buzas.

In order to get the special rate, please mention that you will be attending the "Society of Rheology" Meeting when making your reservations.

The number of rooms at the Bellevue are limited. You are encouraged to submit your reservation form early. Overflow will automatically be lodged at the Doubletree Hotel across the street at the same rate.

Note that lodging at the Bellevue includes access to the Sporting Club at the Bellevue.

---

**The Society of Rheology 66th Annual Meeting**  
**October 2-6, 1994**  
**Hotel Atop the Bellevue**  
**Philadelphia, Pennsylvania**

---

**Location:**

Technical sessions will be held at the Hotel Atop the Bellevue, 1415 Chancellor Court, Philadelphia, Pennsylvania 19102 [Phone # (215) 893-1776]. The Bellevue Building is located on the corner of Walnut and Broad Streets (The Avenue of the Arts), just two blocks south of City Hall in downtown Philadelphia.

**Registration:**

Registration fees includes admission to all technical sessions, plenary lectures, Bingham Award Address, exhibits, Sunday evening reception, Monday's Society Luncheon, the Monday evening reception (to be held at the New Jersey State Aquarium), and the Wednesday evening Poster Session on "Recent Research Communications." The fees are outlined in the enclosed registration form. The Society Banquet will be held on Tuesday evening in the Ballroom of the Bellevue; the cost of this event is \$30, which is not included in the registration fees. As the number of Banquet tickets is limited, please make your reservations at the time of meeting registration.

Please complete and return the enclosed registration form to: Debbie Cook, Department of Chemical Engineering, University of Delaware, Newark, Delaware 19716. The registration fee may be paid by check or money order made payable to University of Delaware; participants paying via Mastercard, Visa or Discover may also do so via FAX to (302) 831-3009. Refunds will be granted if cancellation is received in writing by September 14 less a \$25 administrative fee; no refunds will be granted after that date. Substitutions will be accepted until September 23.

**Welcoming Reception:**

T. A. Instruments, Inc. will host a reception on Sunday evening from 7:00 - 10:00 P.M. in the Bellevue, in conjunction with the meeting registration.

**Society Luncheon:**

This year's registration fees include admission to the Society Luncheon, to be held on Monday, October 3 in the Rose Garden Room of the Bellevue at 12:00 noon. This buffet luncheon will be partially sponsored by Haake, Inc., and will include the official conference opening and a report on the activities and status of the Society.

**Society Reception:**

Rheometrics, Inc. will host a reception to be held at the New Jersey State Aquarium in Camden from 7:00 - 10:00 P.M. on Monday evening. Bus service to and from the hotel will be provided.

**Bingham Award Banquet:**

The Bingham Award Banquet will be held in the Ballroom of the Bellevue on Tuesday, beginning at 7:00 P.M. Dinner will be served at 8:00 P.M. Tickets for the banquet may be purchased through the enclosed registration form, and should be purchased ahead of time as seating is limited. Bohlin Instruments will host a pre-banquet reception at the Bellevue for those attending the banquet.

**General Business Meeting:**

The annual business meeting of The Society of Rheology will be held at the Hotel Atop the Bellevue on Tuesday, October 4 from 5:00 - 6:30 P.M. All members are encouraged to attend.

**Poster Session "Recent Research Communications":**

A poster session will be held immediately following the technical session on Wednesday, October 5 in the Hotel Atop the Bellevue. This event is sponsored by PAAR Physica USA, Inc. and will include refreshments. Those interested in presenting a poster are encouraged to submit an abstract to Professor Annette Shine, Department of Chemical Engineering, University of Delaware, Newark, Delaware 19716. (See enclosed flyer.)

### **Transportation:**

Philadelphia's International Airport is served by all major airlines and is located approximately 6 miles from downtown Philadelphia and the Hotel Atop the Bellevue. Taxi service takes approximately 25 minutes with an estimated cost of \$20-22. Airport Shuttle service is available for about \$8.00 door-to-door [to make reservations: Limelight (Phone - 342-5557); Airport Shuttle (Phone - 969-1818)]. There is also SEPTA rail service from the airport to 16th and Market Streets (Suburban Station, about 5 minutes from the hotel by foot) for \$5.00. Frequent Amtrak service to Philadelphia's 30th Street Station (again, about 1 mile or 10 minutes from the hotel by cab) connects to many major east coast cities. There is ample parking attached to the hotel or in daily parking lots within a few blocks. Drivers can reach the hotel by taking Broad Street (South from I-695, connect via Market Street from I-76, or exit North from I-95). The hotel is located two blocks south of City Hall. The Hotel Concierge can be reached at 790-2856 for further directions.

### **Instrument Exhibits:**

Several instrument vendors will demonstrate their products throughout the meeting on the Ballroom Balcony of the Bellevue.

### **Sightseeing:**

Philadelphia is a city rich in culture and heritage, with many artistic and modern cultural opportunities. The hotel is within walking distance of the Independence Hall, the Liberty Bell, Society Hill, and the famous Reading Terminal Market. With more than 80 colleges and universities and over 100 museums in the greater Philadelphia area, there are daily cultural, intellectual, and recreational offerings. The Hotel Atop the Bellevue occupies the top seven floors of the historic landmark Bellevue Building and includes some of the city's best shopping and dining. Also within Philadelphia are: the Academy of Music, the Walnut Street Theaters, Antique Row, the Philadelphia Museum of Art, the Rodin Museum, Penn's Landing, Fairmount Park, the Franklin Science Museum, City Hall, and the Philadelphia Zoo. South Street, with its numerous shops and cafes, as well as many local restaurants are within walking distance of the hotel. Veterans Stadium and the Spectrum are home to national sporting events. Philadelphia is also home to the new Pennsylvania Convention Center. In the surrounding area one can experience the Amish Country of Lancaster County, Hershey Park, Gettysburg, Valley Forge, Atlantic City and Longwood Gardens, to name a few major attractions. Visitor's guides will be available at the meeting, or may be obtained beforehand from the Philadelphia Visitor's Bureau (1-800-CALL-PHL).

### **Hotel Accommodations:**

The Hotel for this meeting is the Hotel Atop the Bellevue. The rates are \$120 per night plus 12% tax for single or double accommodations (although the number of double accommodations is limited). With the largest guest rooms in the city, the hotel rooms of the Bellevue are beautifully appointed with period details and modern amenities for travelers, such as two-line telephones with computer capabilities, minibars and entertainment centers. Further, 24 hour room service, quick valet, laundry, and a full concierge including executive services is provided. The hotel itself boasts of Founders, one of the city's finest restaurants, the Barrymore Tea and Cocktail Room and the Library Lounge. Furthermore, many of the city's best restaurants and shops are located in the Bellevue building itself, including a new food court.

Overflow will be housed at the Doubletree Hotel, at the same rate, directly across Broad Street from the Bellevue. The Bellevue and the Doubletree are located in Center City, just two blocks from City Hall and within walking distance or short cab rides from all of the major Philadelphia landmarks and shopping centers.

Parking is available at the attached garage at the rate of \$11.00 per day for participants and guests. Additional parking at lower daily rates is available at lots a few short blocks down Broad Street. As rooms are limited in the Bellevue, you should secure your reservation before September 1 by registering using the enclosed form, or by calling (215) 893-1776. The Doubletree can be reached at (215) 893-1600. Please indicate you will be attending the Society of Rheology Meeting when making your reservations. Note that registering at the Bellevue entitles you access to the Sporting Club, one of Philadelphia's largest, located in the attached building.

### **Climate:**

Characteristics for Philadelphia in October are warm Indian summer days (in the upper 70's) and pleasantly cool nights (lows in the 50's). The turning foliage provides a colorful backdrop to the city. Rain is possible so umbrellas are advisable.

---

---

**XX THE 66<sup>th</sup> ANNUAL MEETING XX**

of the

**SOCIETY OF RHEOLOGY**

at the

*Hotel Atop The Bellevue*

OCTOBER 2 - 6, 1994

PHILADELPHIA, PENNSYLVANIA

---

---

**CALL FOR PAPERS**

***SPECIAL***



**POSTER SESSION**



**FOR**

**RECENT RESEARCH COMMUNICATIONS**

(PRESENTED ON WEDNESDAY, OCTOBER 5<sup>th</sup> AFTER THE AFTERNOON SESSIONS)

*Refreshments Provided*

SUBMIT A TITLE AND A SHORT ABSTRACT

BEFORE SEPTEMBER 1, 1994

TO

**PROFESSOR ANNETTE SHINE**

**University of Delaware**

**Department of Chemical Engineering**

**Newark, Delaware 19716**

**302-831-2010 or FAX 302-831-1048**

**Internet E-mail: [shine@che.udel.edu](mailto:shine@che.udel.edu)**

---

---

**9th International Congress of  
Biorheology  
and  
2nd International Conference on  
Clinical Hemorheology**

**Yellowstone Conference Center  
Big Sky, Montana, USA  
July 23-28, 1995**

The International Society of Biorheology and the International Society for Clinical Haemorheology will hold their next International Meetings as a joint Congress; the North American Society of Biorheology is the host society. The scientific portion of the program will consist of plenary lectures, mini-symposia, oral and poster presentations, and technical exhibits.

Scientific topics for the Congress will relate to all aspects of the rheological properties and mechanical behavior of biologically-important materials or systems. Thus, subject matter can deal with normal and pathological processes at the molecular, cellular, organ, whole body, or other complex system level. Basic science, clinical, and biotechnological presentations are welcome; both theoretical and experimental aspects of these areas are appropriate.

Individuals at research institutes, universities, pharmaceutical companies, and biotechnology enterprises are encouraged to submit papers.

An all-day trip through Yellowstone Park, followed by a western barbecue, will be the main social event of the meeting. Additional activities, ranging from trips to old ghost towns to golfing to white-water rafting and hiking, will be available for accompanying persons.

Registration and abstract submission forms and information will be available in October 1994.

Those wishing to be placed on the mailing list for further announcements of this meeting should contact:

Prof. Giles R. Cokelet  
Department of Biophysics  
University of Rochester  
601 Elmwood Avenue  
Rochester, New York 14642, USA  
FAX: 716-275-6007  
E-mail:  
Cokelet @ Micro. Biophysics. Rochester. Edu

# REGISTRATION FORM

## RHEOLOGY SHORT COURSE

Hotel Atop the Bellevue  
1415 Chancellor Court  
Philadelphia, PA 19102

Do you need confirmation? _____
Will you need a receipt? _____

(800) 221-0833  
Fax (215) 893-9868

Date \_\_\_\_\_

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Business Telephone \_\_\_\_\_

FAX \_\_\_\_\_

Date of Arrival \_\_\_\_\_

Please make checks payable to The Society of Rheology

---

Return this registration form together with payment to:

Professor Peter E. Clark  
Department of Mineral Engineering  
The University of Alabama  
Box 870207  
Tuscaloosa, AL 35487

---

NOTE: The course will begin at 8:30.

Date Received _____
Payment _____

July 10-14, 1995: 5th Int. Conf. on Electro-Rheological, Magneto-Rheological and Other Structured Functional Fluids, Sheffield, UK. Contact: Norma Parkes, Dept. Mech. and Process Eng., U. Sheffield, PO Box 600 Mappin St., Sheffield S1 4DU UK, 44 742 825169, Fax: 44 742 753671, Email: N.Parkes@Sheffield.ac.uk

July 23-28, 1995: 9th Int. Cong. Biorheology - 2nd Int. Conf. on Clinical Hemorheology, Yellowstone Conference Center, Big Sky, MT. Contact: Prof. Giles Cokelet, Dept. Biophysics, University of Rochester, Rochester, NY 14642, (716) 275-5283, Fax: (716) 275-6007, Email: Cokelet@micro.biophysics.rochester.edu

October 8-12, 1995: 67th Annual Meeting of the Society of Rheology, Sacramento, CA.

## CHANGE OF ADDRESS

If you are moving, be sure to inform: Janis Bennett, (516) 576-2403, Fax: 576-2223, or Carolyn Gehlbach, (516) 576-2404 at the following address.

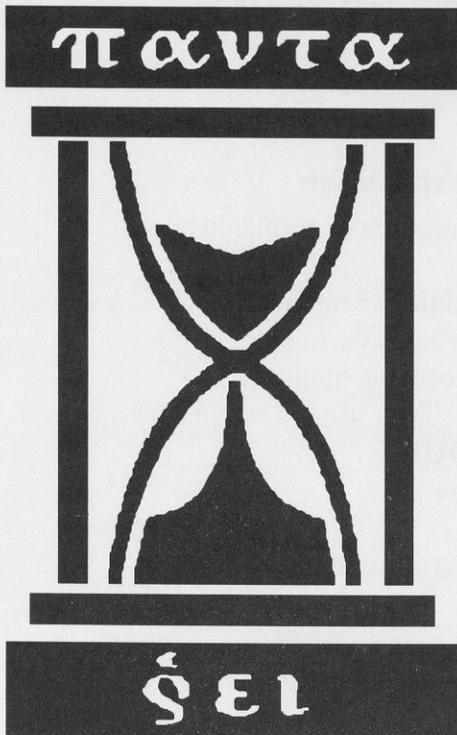
**THE SOCIETY OF RHEOLOGY**  
**c/o American Institute of Physics**  
**500 Sunnyside Boulevard**  
**Woodbury, NY 11797**

### JOURNAL OF RHEOLOGY STATEMENTS OF REVENUE AND EXPENSE AS OF DECEMBER 1993

	<u>1992 Budget</u>	<u>1992 Actual</u>	<u>1993 Budget</u>	<u>1993 Actual</u>	<u>1994 Budget</u>
<b>REVENUES</b>					
SUBSCRIPTION, ADVERTISING AND SALES	\$ 197,840	\$ 196,360	\$ 208,800	\$ 201,615	\$ 200,191
PAGE CHARGES	13,000	9,975	8,000	7,678	-
MISCELLANEOUS	6,990	7,147	7,223	7,578	8,075
<b>TOTAL REVENUE</b>	<b><u>217,830</u></b>	<b><u>213,482</u></b>	<b><u>224,023</u></b>	<b><u>216,871</u></b>	<b><u>208,266</u></b>
<b>EXPENSES</b>					
ADVERTISING AND MARKETING	15,000	25,270	15,600	8,095	12,050
SINGLE COPY AND REPRINTS	9,250	7,448	7,954	7,457	8,825
AIP EDITORIAL	30,600	31,963	27,097	29,368	35,280
SOR EDITORIAL	33,000	25,906	34,500	29,483	33,000
PRODUCTION COSTS	53,750	52,947	43,431	48,191	57,309
PRINTING AND MAILING	44,880	44,598	36,129	35,135	49,503
SUBSCRIPTION FULFILLMENT	10,900	10,470	10,729	10,752	11,307
<b>TOTAL EXPENSE</b>	<b><u>197,380</u></b>	<b><u>198,602</u></b>	<b><u>175,440</u></b>	<b><u>168,481</u></b>	<b><u>207,274</u></b>
<b>NET INCOME</b>	<b><u>\$ 20,450</u></b>	<b><u>\$ 14,880</u></b>	<b><u>\$ 48,583</u></b>	<b><u>\$ 48,390</u></b>	<b><u>\$ 992</u></b>

**THE SOCIETY OF RHEOLOGY  
STATEMENTS OF REVENUE AND EXPENSE  
AS OF DECEMBER 1993**

	<u>1992 Budget</u>	<u>1992 Actual</u>	<u>1993 Budget</u>	<u>1993 Actual</u>	<u>1994 Budget</u>
<b>REVENUES</b>					
Dues	\$ 46,000	\$ 45,540	\$ 47,000	\$ 48,207	\$ 47,000
Interest	19,000	14,710	11,000	14,096	14,000
Journal of Rheology	217,830	213,482	224,023	216,871	208,266
Mailing list Sales	350	168	300	434	200
Annual Meetings	-	-	5,000	7,726	4,000
Short Courses	-	-	6,000	9,551	4,500
<b>TOTAL REVENUE</b>	<u>283,180</u>	<u>273,900</u>	<u>293,323</u>	<u>296,885</u>	<u>277,966</u>
<b>EXPENSES</b>					
AIP Administrative Service	6,000	6,000	6,000	6,000	7,000
AIP Billing	800	-	-	-	-
AIP Member Society Dues	2,400	3,330	3,200	3,612	4,800
AIP Member Records	7,500	-	-	-	-
AIP Financial Handling	3,000	3,471	4,000	4,000	4,000
AIP Physics Olympiad	1,000	-	1,000	2,000	1,000
Renewal Billing	-	1,432	1,500	1,461	1,500
Journal of Rheology	197,380	198,602	175,440	168,481	207,274
Bulletins & Abstracts	5,000	13,053	6,000	9,791	6,500
Short Courses	-	25	6,000	5,418	4,500
Bingham Award	3,000	-	6,500	5,000	3,000
Executive Cmt. Meeting	2,500	3,406	8,000	5,373	6,500
Pres. Discretionary Fund	1,000	500	1,500	500	1,500
Trea. Discretionary Fund	1,000	508	1,500	494	1,500
Program Chm. Discre. Fund	-	-	2,000	-	2,000
Secretarial Services	1,000	-	1,000	575	1,000
Mailing	2,500	118	5,000	1,734	5,000
Office Expenses	1,500	464	2,500	1,286	1,500
Banking Services	50	5	25	10	25
Liability Insurance	150	182	200	182	182
Council of Sc. Society Pres.	250	-	-	-	-
Membership Directory	2,500	6,584	-	273	4,500
Membership Brochure	500	202	1,500	692	1,000
Accountant	1,000	1,450	1,500	1,095	1,500
Student Member Travel Grant	-	-	3,500	1,648	5,000
Advance Deposit For Future Mtg.	-	-	-	500	1,000
Miscellaneous	-	2,500	500	-	500
<b>TOTAL EXPENSE</b>	<u>240,030</u>	<u>241,832</u>	<u>238,365</u>	<u>220,125</u>	<u>272,281</u>
<b>NET INCOME</b>	<u>\$ 43,150</u>	<u>\$ 32,068</u>	<u>\$ 54,958</u>	<u>\$ 76,760</u>	<u>\$ 5,685</u>
<b>NET ASSETS AT YEAR END</b>		<u>\$ 289,399</u>		<u>\$ 366,159</u>	



# The Society of Rheology

Presents

A Two-Day Short Course on

*Optical Rheometry: Optical  
Methods for Structure and  
Dynamics*

by

**Gerald G. Fuller**  
**Stanford University**

## Course Description

Optical methods provide a powerful means of studying the dynamics and structure of complex polymeric and colloidal liquids subject to flow. The choice of an optical technique is motivated by the microstructural information it provides, its sensitivity and dynamic range. In the development of constitutive equations to describe the flow behavior of complex liquids, for example, complementary optical measurements of structure can be used to identify the microstructural mechanisms responsible for complex rheology. Applications on the use of optical rheometric techniques include spatially resolved measurements of stresses in complex flows, on-line determination of flow induced structure, and separation of the component dynamics in multi-component mixtures and blends. When applied to suspensions, it is possible to extract particle size and shape information.

The choice of the particular optical technique to apply will depend on the nature of the microstructure that is being investigated. This course will cover the use of intrinsic birefringence and dichroism for the measurement of segmental orientation in polymers and liquid crystals, form birefringence to follow flow-induced morphology in block copolymers, small angle light scattering for the measurement of emulsions and blends, and spectroscopic techniques (infra-red and Raman scattering) for multicomponent blends and solutions.

## Course Outline

### 1. SESSION ONE

- Overview of concepts in mechanical rheometry.
- Introduction to the physics of light propagation.
- Birefringence and dichroism.
- Transmission of light through anisotropic materials.
- Jones and Mueller calculus.
- Reflection and refraction of light by interfaces.

### 2. SESSION TWO

#### Scattering of Light

- Rayleigh and Rayleigh-Debye scattering.
- Fluctuations and the structure factor.
- Form dichroism and birefringence.

#### Spectroscopic Methods

- Dichroism in the ultra-violet, visible and infra-red.
- Raman scattering.

### 3. SESSION THREE

#### Molecular Models of Optical Properties

- The Lorentz-Lorenz equation.

- The Kuhn and Grun model of a flexible chain.
- Form contributions of birefringence and dichroism.

#### Design of Optical Experiments

- Designs of transmission experiments: polarimeters.
- Polarization modulation methods.
- Design of scattering experiments.
- Design of spectroscopic methods.

### 4. SESSION FOUR

#### Applications

- Spatially resolved stress field measurements.
- Particle size and shape analysis.
- Flow-induced mixing/demixing in blends.
- Orientation in liquid crystals.
- Structure of bloc copolymers.
- Component dynamics in polymer mixtures using spectroscopic techniques.
- Discussion of applications for on-line measurements.

#### Laboratory Demonstration.

## Registration

The fee for the two-day course and lecture notes is \$375 prior to September 15, 1994. For registration after September 15, the fee will be will be \$400. Student rates are half of the above.

**Checks should be made payable to The Society of Rheology** and sent together with the registration form to

Professor Peter E. Clark  
Department of Mineral Engineering  
The University of Alabama  
Box 870207  
Tuscaloosa, AL 35487

Telephone (205) 348-1682  
Fax (205) 348-9455

Reservations for lodging at the Hotel Atop the Bellevue should be made by the participant (Fax (215) 893-9868. A block of rooms has been reserved so mention the Society of Rheology when making reservations.