

# RHEOLOGY BULLETIN

Published by The Society of Rheology

Vol. 66 No. 2



July 1997

## THE SOCIETY OF RHEOLOGY EXECUTIVE COMMITTEE - 1995-97

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P. Moldenaers  
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### Meetings Policy:

R.G. Larson, chair  
G.G. Fuller  
A.J. Giacomin  
A.M. Kraynik  
R.L. Powell

### Bingham Award:

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G.C. Berry  
A. Chow  
D.F. James  
A.J. McHugh  
A.B. Metzner  
W.M. Prest, Jr.

### Nominating:

R.A. Mendelson, chair  
A.N. Beris  
C.L. Tucker III

## Nominations for the 1998 Bingham Medal

Guidelines for the Bingham award may be found at <http://www.umecheme.maine.edu/sor/awards/bingham/rules.htm> Nominations should be submitted before **January 16, 1998** to the next chair of the Bingham Award Committee, Professor Eric S.G. Shaqfeh, at the Department of Chemical Engineering, Stanford University, Stanford, CA 94305. Phone: (415) 723-3764; Fax: (415) 723-9780 e-mail: [eric@chemeng.stanford.edu](mailto:eric@chemeng.stanford.edu)

## 69th ANNUAL MEETING COLUMBUS, OH OCTOBER 19 - 23, 1997

The annual meeting of the Society of Rheology will be held at the Hyatt on Capital Square Hotel in Columbus, Ohio. Details of the technical program may be found on the Society's web page at <http://www.umecheme.maine.edu/sor/> while other details are given inside this issue of Rheology Bulletin. Also enclosed are the meeting registration and hotel reservation forms. The meeting organizers are:

### Technical Program Chair:

Robert L. Powell  
Dept. of Chemical Engineering & Materials Science  
University of California at Davis  
Davis, CA 95616  
(916) 752-8779; Fax: (916) 752-1031  
e-mail: [rlpowell@ucdavis.edu](mailto:rlpowell@ucdavis.edu)

### Local Arrangements:

Jacques L. Zakin, Chair  
Kurt Koelling, Co-Chair  
Stephen Bechtel  
Robert Brodkey  
Department of Chemical Engineering  
Ohio State University  
Columbus, OH 43210

**POSTER SESSION** A poster session will be held in Columbus on Wednesday, October 22. The deadline for submission of abstracts to Professor L.E. Wedgewood of the University of Washington, Seattle is September 5, 1997. Abstracts may be submitted using the Web-based procedure at <http://www.umecheme.maine.edu/sor/>

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

## GERRY FULLER 1997 BINGHAM MEDALIST

The Bingham Medal for 1997 will be awarded at the Columbus meeting of the Society to Professor Gerry Fuller of Stanford University. This award has been given in recognition of outstanding scientific contributions to the field of rheology, especially in the area of optical rheometry. A write-up appears overleaf.

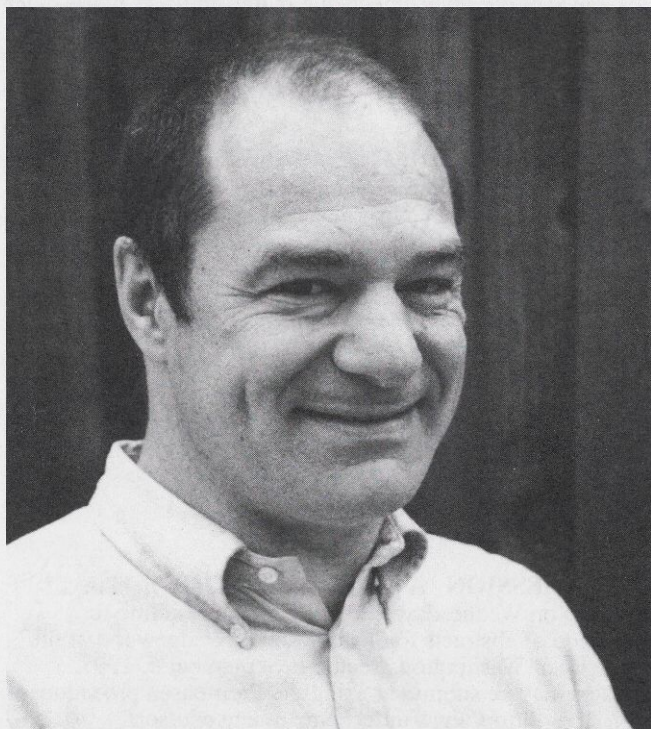
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RHEOLOGY BULLETIN  
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## 1997 BINGHAM MEDAL GOES TO FULLER

Gerald G. Fuller of Stanford University has been chosen to receive the 1997 Bingham Medal. Gerry has pioneered many experimental techniques in the area of optical rheometry. These include simple, inexpensive methods for high-speed, time-resolved simultaneous measurements of extinction angle and birefringence, with analogous methods for measuring light scattering, infrared dichroism and Raman scattering.



Professor Gerald G. Fuller

Gerry's group at Stanford has clearly demonstrated the power of the various optical techniques for understanding molecular orientation of a wide variety of complex fluids in flow fields. The complex fluids studied include linear polymer melts and solutions, gels, block copolymers, liquid crystal polymers, rod-like polymer solutions, polymer blends, emulsions, suspensions, and, most recently, Langmuir films. The flow fields include oscillatory shear, steady shear, and extensional flow. These rheo-optical techniques have been nicely

summarized in Gerry's recent book entitled, **Optical Rheometry**. Two of these techniques have been developed into commercial rheometers. The Rheo-Optical Analyzer measures birefringence and conservative dichroism of fluids in a variety of linear and nonlinear shear flows. The Extensional Rheometer measures birefringence of low-viscosity fluids in an uniaxial extensional flow centered between fluid-withdrawing opposing jets.

The real strength of Gerry Fuller's work goes far beyond experimental technique development. It is Gerry's keen interest in the physics of complex fluids that has spawned these techniques. Examples of complex fluid physics where Gerry's group has recently furthered our understanding include the conformation of flexible polymers in flow, alignment of rod-like polymers in flow, the structure of liquid crystal defect texture, and the dynamics of miscible polymer blends. In each of these areas, Gerry chose particular rheo-optical methods aimed at testing specific ideas about how such materials should behave. In many cases, the experiments uncovered new aspects of complex fluid physics that had not been anticipated in advance. One example of this is the orientational coupling observed in blends of two polymers. When the fast component relaxes, one would expect the ensemble average of its segmental orientation to decay to zero. However, the fast component feels the presence of the unrelaxed slow component and, consequently, maintains some residual orientation that does not decay to zero till the slow component relaxes. This orientational coupling has been demonstrated unambiguously by selective deuterium labeling of one blend component and monitoring infrared-dichroism at the wavelength of the stretching vibration of a carbon-deuterium bond. Orientational coupling has been found to be quite universal, occurring in miscible polymer blends and networks.

By teaching all rheologists the power of optical probes in the study of the flow of complex fluids, Gerry has assured that his contributions will carry on to future generations. His students in academia and industry are further advancing this rapidly-growing branch of rheometry. Please be sure to join us in Columbus to celebrate Gerry's success.

**R.H. Colby and J.A. Kornfield**

## Science History Exhibits on WWW

Check out AIP's new WWW site for the history of Physics, Astronomy and Geophysics at <http://www.aip.org/history/>. Information is available on AIP's Niels Bohr Library and the Center for History of Physics. A featured Web exhibit is **Einstein: Image and Impact** which uses photographs, quotes, and text to present highlights of Albert Einstein's life. Also featured is the **Discovery of the Electron**, 1997 being the centenary of J.J. Thompson's experiments leading to the discovery of the first fundamental subatomic particle.

## RHEOLOGICAL TECHNIQUES -- BOOK OFFER

Rheological Techniques by R.W. Whorlow, 2nd Edition, (Ellis Horwood, 1992, 460pp., 79.95 sterling) is now out of print. The author has, however, been able to obtain some remaining copies and is able to offer them in the US at only 20 pounds sterling, including postage (surface mail) and packing if payment is in sterling or \$40 by dollar check. Please send orders, with checks, to: Dr. R.W. Whorlow, 3 Pittville Crescent Lane, CHELTENHAM, Glos. GL52 2RA, United Kingdom.

## COMMENTS FROM THE PRESIDENT KURT WISSBRUN

### FURTHER REFLECTIONS ON THE SOCIETY

A year ago I took the opportunity to reflect in these pages on the status of The Society of Rheology, and to consider possibly beneficial changes to its structure and to its direction. I closed, as is customary, with an invitation to the membership to express their views on the proposal made, and on any other topics of interest that had not been addressed. And, as is also customary, I believe, there was not a single response.

What conclusion should be drawn from the complete lack of response? I do not believe that it reflects indifference, or perhaps a sense of futility, that nothing worthwhile could be accomplished by expressing one's views. Certainly the often lively discussion at our business meetings counters that conclusion. More likely, then, it means that the membership is (reasonably) content with the state of The Society, and really does not want any great change.

And yet, changes have occurred over the years. For example, the Constitution under which we operate is version 3.0, the original dating back to 1929, subsequently "fully amended" in 1941 and 1947. And at present we have an ad hoc Committee considering other changes, including making the wording of the Constitution gender-neutral. More apparent in its effect on the membership was the assumption of the publication of the Journal, which has enabled us to maintain its quality and size without excessive financial burden on the members and on the library community. And, we plan to have the Journal available to subscribers on-line next year. And this Bulletin is also evolving, including not only news items, but also advertising and technical content.

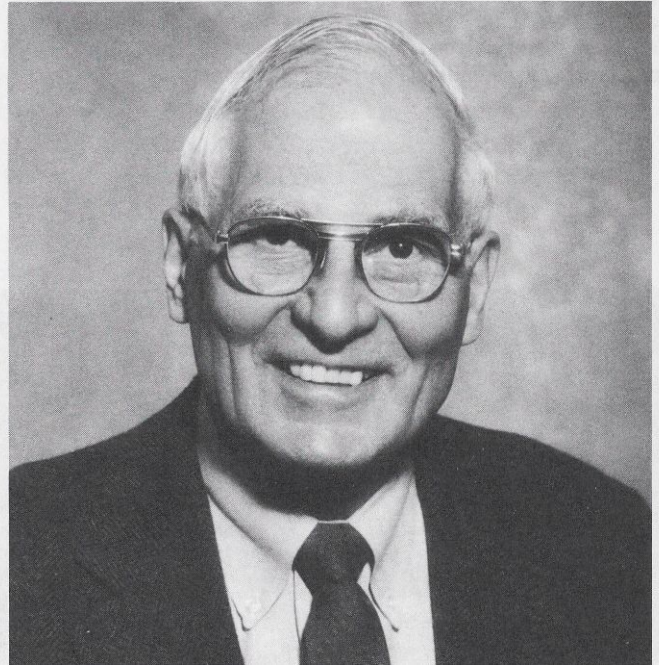
If I'm permitted to draw an analogy from our field, it seems that the response of The Society of Rheology to calls for change is best characterized, fittingly enough, as that of a Bingham body. If the applied stress is small, SoR acts like an elastic body, with a strong desire to retain its unstressed configuration. However, if the external stress is sufficiently large (as was the financial and editorial situation which led to our publishing the Journal), SoR does change and adapt to the new circumstances.

There are always some external stresses - the uncertainty of what will happen in the field of technical publications is one that I addressed in my comments last year. However, we have a tremendous resource in a membership of dedicated volunteers that are ready to accept the tasks to maintain the successful operation of The Society. It has been a constant source of gratification that it has never been difficult to find members willing to serve on the various committees that do the actual work of The Society, and in fact that members offer their services without being asked. The resource to help us through any difficult times ahead is the essential financial reserve that has been built under the watchful guidance of our long-time Treasurer, Ed Collins, for whose contributions in all aspects of SoR's operations I cannot find words adequate to express my admiration and gratitude.

So, I am optimistic that as long as rheologists find interesting problems on which to work, The Society of Rheology will continue to offer them the opportunity to present their results in meetings with their colleagues and to publish them for the use of the entire community. It has been a privilege to have had the opportunity to try to repay a portion of the great benefits I have received from The Society throughout my career.

## METZNER RECEIVES DISTINGUISHED SERVICE AWARD FROM THE SOCIETY

Arthur B. Metzner received the Distinguished Service Award from the Society of Rheology at the Galveston meeting of the Society in February. Given at the discretion of the Executive Committee of the Society, the Distinguished Service Award recognizes exceptional service to the Society and has been presented only three times in the past.



Arthur B. Metzner

A graduate of the University of Alberta with a doctorate from the Massachusetts Institute of Technology, Metzner has been a pioneer in the field of rheology. He served as editor of the Journal of Rheology till 1995, and under his guidance the stature and impact of the journal increased, making it the most prestigious rheology journal. He has provided leadership to the Society including, most recently, being the Society's representative to the International Committee on Rheology.

Metzner has received many awards and honors during his career, including the Bingham medal of the Society. He is a member of the National Academy of Engineering, one of the highest professional distinctions in the field. After 40 years of distinguished service, he retired from the University of Delaware in 1993 as the H. Fletcher Brown Professor of Chemical Engineering Emeritus.

### Membership Application Forms and other Information Available on the World Wide Web

Application forms for membership in the Society of Rheology can now be downloaded from the home page of the Society on the World Wide Web. The address is <http://www.umecheme.maine.edu/sor/> Also available on the home page are abstracts of forthcoming papers in the Journal of Rheology and a listing of upcoming rheology meetings.

## MINUTES OF THE EXECUTIVE COMMITTEE MEETING February 16, 1997

The meeting was called to order at 9:00 a.m. in the San Luis Hotel, Galveston, Texas. Executive Committee Members in attendance included: Kurt Wissbrun, Ron Larson, Ed Collins, Morton Denn, Bob Armstrong, Gerry Fuller, Jeff Giacomini, and Andy Kraynik. Invited guests included: Don Baird, Janis Bennett, Peter Clark, Albert Co, Ralph Colby, Rakesh Gupta, Bob Mendelson, Art Metzner, Bob Powell, Monty Shaw, Bill VanArsdale, Ken Walters, and Jack Zakin.

The minutes of the August 18, 1996 Executive Committee Meeting, which appeared in the January 1997 Rheology Bulletin, were approved as read.

Ron Larson led discussion on future meetings of the Society. Bill VanArsdale's report on local arrangements for the Galveston meeting included an impressive demonstration of computer software for meeting organization; Don Baird provided an overview of the technical program. Jack Zakin reported on local arrangements for the annual meeting in Columbus, Ohio, October 19-23, 1997. Gerry Fuller discussed plans for a meeting in Monterey, California, October 4-8, 1998. Jeff Giacomini talked about the annual meeting in Madison, Wisconsin, October 17-21, 1999. Don Baird presented a proposal to organize the Winter 2001 meeting in Fort Myers or Key West, Florida. Art Metzner reported on discussions of the International Committee on Rheology relating to future venues of the International Congress on Rheology. In Quebec City, the committee voted to hold ICR 2000 in Cambridge, U.K. The International Committee is also studying the disparity between locations of the International Congress and membership in national societies of rheology in the three major regions: Europe, Asia-Pacific, and the Americas.

Monty Shaw, Associate Editor for Finance, provided a financial report for the Journal of Rheology. We had 474 institutional subscriptions at the end of 1996, which is consistent with declines over the last several years. The committee voted to increase non-member subscriptions to \$475 and to offer an electronic version of the Journal of Rheology to non-member subscribers. Morton Denn indicated that editorial activities for the Journal continue to run smoothly. Kurt Wissbrun summarized a recent survey of librarians indicating low demand for a CD-ROM version of back issues of the Journal of Rheology. Ed Collins, Treasurer, reported that the financial condition of the Society remains healthy; details can be found in the Rheology Bulletin.

Ralph Colby encouraged submission of nominations for the Bingham Medal.

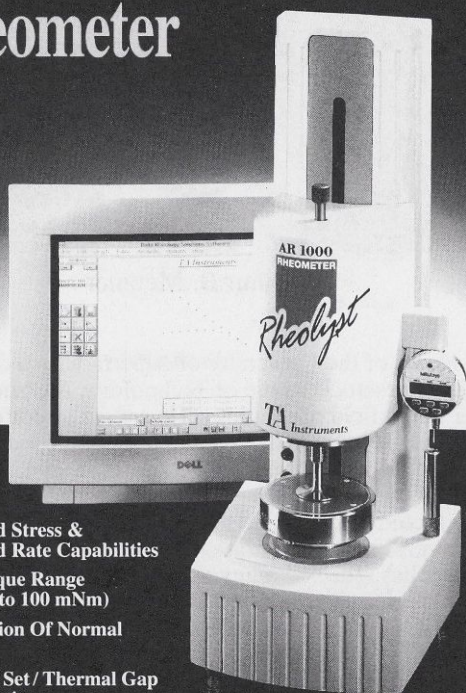
Albert Co reported on his activities in support of the Society of Rheology Home Page on the World Wide Web. The Executive Committee thanked Albert for his hard work. Rakesh Gupta provided an update on the Rheology Bulletin. As part of his report on the Membership Committee, Jeff Giacomini indicated that Society membership continues to grow. Peter Clark reviewed plans for future short courses on rheology. Janis Bennett discussed plans to produce the next Membership Directory of the Society. Jeff Giacomini reported on progress of the Ad Hoc Committee on Constitutional Reform.

The Nominating Committee consists of Bob Mendelson (chair), Antony Beris, and Charles Tucker. Mendelson reported on a recommendation by his committee to increase the number of Members-at-Large on the Executive Committee from two to three and eventually four members. Following discussion, we agreed to bring this issue before the members at the Business Meeting.

Ken Walters provided an update on activities in Europe relating to formation of a European Society of Rheology.

Following an executive session, the meeting was adjourned at 4:30 p.m.

## Announcing the AR 1000 Rheometer



- Controlled Stress & Controlled Rate Capabilities
- Wide Torque Range (0.1  $\mu$ Nm to 100 mNm)
- Quantitation Of Normal Force
- Auto Gap Set/ Thermal Gap Compensation
- Operational Modes Include Equilibrium Flow, Creep, Multiwave, Superimposed Flow/Oscillation, TTS

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**MEETING INFORMATION**  
The Society of Rheology 69th Annual Meeting  
October 19-23, 1997, The Hyatt on Capitol Square, Columbus, Ohio

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**Location**

The Autumn 1997 meeting of the Society of Rheology will be held at the Hyatt on Capitol Square in Columbus, Ohio, October 19 to 23, 1997. A mailer registration form from the Hyatt is enclosed. Rates are \$112 (single or double, plus tax). The Hyatt is a 22-story, 400 room luxury hotel in downtown Columbus. The hotel is adjacent to the Art Deco Ohio Theater and the Columbus City Center, a three-story upscale mall with three major department stores and 121 specialty shops. The Hyatt on Capitol Square has an award-winning restaurant, two bar lounges, and the 6,000 square foot Governor's Ballroom. Facilities include a Penthouse Fitness Center with exercise and workout equipment, a sauna and whirlpool. Within blocks of the hotel are major corporate offices, the Columbus Museum of Art, and the Center of Science and Technology (COSI). The hotel provides complimentary downtown shuttle service. Weather in Columbus in October is generally pleasant with temperatures ranging from 45 to 65 F, but bring a raincoat just in case.

The Hyatt is holding 65 rooms for Saturday, October 18 and 130 for Sunday, October 19, 1997, and Monday, October 20. They will guarantee these reservations only until September 29, 1997. There is an Ohio State football game with Indiana on October 18th so hotel rooms in Columbus will be in very short supply that weekend. Please make your reservations as soon as possible and definitely before September 29, 1997.

**Transportation**

Port Columbus International Airport is fifteen minutes away from the Hyatt and is served by most airlines. Limousine service runs every half hour and will deliver you to the Hyatt Capitol Square for \$8.50. Taxis from the airport cost about \$15.00. Valet parking is available at the hotel.

**Registration**

The registration fee includes program abstracts and admission to social events, exhibits, technical sessions, plenary lectures and the Bingham Award Address. The Bingham Award Banquet, held Tuesday evening, costs an additional \$35 per person. Please purchase tickets for this event before the meeting. A Meeting Registration form is enclosed. Please complete it and mail it to: Rheology Meeting, 225 Mount Hall, 1050 Carmack, Columbus, OH 43210; (614) 292-4230. The registration fee may be paid by check or money order made payable to the Society of Rheology. Registrants paying by Mastercard or Visa may do so by FAX to (614) 292-0492. Registrations received after September 15, 1997 will incur a late charge.

Registration material can be picked up and late registration will be held in the Legislative Foyer of the Hyatt from 6:00 to 9:00 P.M. Sunday, October 19 or after 8:00 A.M. on October 20, 21 or 22.

**Welcoming Reception**

T.A. Instruments will host a reception in the Legislative Foyer of the Hyatt on Capitol Square on Sunday, October 19 from 7:00 to 10:00 P.M.

### **Society Reception**

Rheometrics, Inc. will host, with the Society, a reception at 9:00 P.M. on Monday, October 20th in the Ohio Statehouse Atrium, across the street from the Hyatt. The historic State Capitol Building has recently been restored to its original grandeur at a cost of \$112 million. The building was completed in 1861 in Greek Revival architecture style. It is the eighth oldest working Statehouse in the nation. Abraham Lincoln's body was laid to rest in the rotunda of the Capital in 1865 on the way home to Illinois. Docent tours of part of the Statehouse will be scheduled during the reception.

### **Society Business Meeting**

The annual business meeting of The Society of Rheology will be held in the Legislative Room of the Hyatt on Tuesday, October 21st, immediately after the last afternoon paper about 5:30 P.M.

### **Bingham Award Banquet**

A reception will be held beginning at 7:00 P.M. on Tuesday, October 21st prior to the Bingham Award Banquet in the Governors Foyer AB of the Hyatt. Dinner will be served at 8:00 P.M. in the Governors Ballroom AB for those attending the banquet. Wine for the reception and banquet will be provided by Haake, Inc.

### **Poster Session**

PAAR Physica USA, Inc. will sponsor a reception in conjunction with the Poster Session on Wednesday, October 22 at The Hyatt. This event will start at the conclusion of the technical session. Posters will be on display in the Legislative Room.

### **Exhibits**

Vendors will demonstrate their products in the Congressional Room which is near the conference rooms. Coffee will be served in this room. This area will be staffed half an hour before a coffee break until about half an hour after the break. Exhibits will also be open during the poster session Wednesday evening.

### **Accompanying Persons Program**

An informal accompanying person program is being organized. It will begin with coffee at 10:00 AM on Monday, October 20th in the second floor lounge of the Hyatt. Docent tours are planned for the Columbus Art museum, the prize winning Wexner Center (on the Ohio State campus) with its deconstructionist architecture, and the elegantly restored Art Deco Ohio Theater. There will be no charge for the tours other than admission costs, and informal lunch arrangements will be planned.

### **Sightseeing**

Some of the other sites in Columbus that attendees may want to visit are the world-famous Columbus Zoo, COSI (Columbus Science and Industry museum), the Downtown Shopping mall adjacent to the Hyatt Capitol Square Hotel, the new startlingly designed Columbus Convention Center, a replica of Christopher Columbus's Santa Maria, the Franklin Park Conservatory, and the Topiary garden recreation of Georges Seurat's "A Sunday Afternoon on the Island of La Grande Jatte."

# REGISTRATION FORM

## The Society of Rheology 69th Annual Meeting

### October 19-23, 1997, The Hyatt on Capitol Square, Columbus, Ohio

Last Name: 

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First Name: 

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Name as you would like it to appear on badge: \_\_\_\_\_

Affiliation: 

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Address: 


City: 

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State/Province: 

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Postal Code: 

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Email: 

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Registration Fee: Conference registration includes program as well as access to the vendor display, all technical sessions, coffee breaks and receptions. The registration fee does not include the Banquet, which is subject to limited seating. Please indicate the number of tickets you are purchasing for this event. Cancellations received in writing by October 1, 1997 will be subject to a \$25 administrative charge. No refunds will be granted after that date.

	fee (if paid by 9/16/97)	fee (if paid after 9/16/97)	
<input type="checkbox"/> Member	\$95	\$120	
<input type="checkbox"/> Non-Member (includes membership)	\$145*	\$170*	registration fee \$ _____
<input type="checkbox"/> Non-Member	\$145	\$170	
<input type="checkbox"/> Student (includes membership)	\$55*	\$55*	banquet tickets \$ _____
<input type="checkbox"/> Student	\$30	\$30	
<input type="checkbox"/> Retired Member	\$30	\$30	total enclosed \$ _____
<input type="checkbox"/> Banquet Ticket	\$35	\$35	

\* Non-Member registration includes an optional 1 year membership in The Society of Rheology. Students can become members for an additional \$25. Members receive the *Rheology Bulletin*, the *Journal of Rheology* (6 issues) and *Physics Today* (12 issues).

Method of Payment:    check or money order (payable to The Society of Rheology)    Mastercard    Visa

Account #: 

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

Signature (required for credit card transactions): \_\_\_\_\_

Early registrations will be confirmed by sending a printed receipt by mail. Late registrations will receive a printed receipt in your conference packet. Forms with credit card information may be faxed to (614) 292-0492. Otherwise, mail your completed form and payment to the following address:

Rheology Meeting, 225 Mount Hall, 1050 Carmack, Columbus, OH 43210  
phone: (614) 292-4230; email address: conf@gate.ce.ohio-state.edu

*For Office Use Only*

DATE \_\_\_\_\_ REF# \_\_\_\_\_ CODER \_\_\_\_\_

PT \_\_\_\_\_ CH.# \_\_\_\_\_ AMT. \_\_\_\_\_

CCA# \_\_\_\_\_ TYPE R S C \_\_\_\_\_

JOURNAL OF RHEOLOGY  
STATEMENTS OF REVENUE AND EXPENSE  
AS OF DECEMBER 1996

	<u>1995</u> <u>Budget</u>	<u>1995</u> <u>Actual</u>	<u>1996</u> <u>Budget</u>	<u>1996</u> <u>Actual</u>	<u>1997</u> <u>Budget</u>
<b>REVENUES</b>					
Subscription, Advertising and Sale	\$ 199,375	\$ 204,620	\$ 213,850	\$ 227,053	\$ 202,150
Publication Award	1,000	1,000	1,000	-	1,000
Miscellaneous	<u>1,315</u>	<u>7,666</u>	<u>5,400</u>	<u>7,474</u>	<u>5,200</u>
<b>TOTAL REVENUE</b>	<u><b>201,690</b></u>	<u><b>213,286</b></u>	<u><b>220,250</b></u>	<u><b>234,527</b></u>	<u><b>208,350</b></u>
<b>EXPENSES</b>					
Advertising and Marketing	12,760	8,098	12,870	10,144	12,250
Single Copy and Reprints	3,240	6,142	9,850	8,201	7,000
AIP Editorial	36,770	34,267	33,750	49,130	29,806
SOR Editorial	37,000	29,361	40,000	1,226	44,000
Production Costs	56,830	52,054	56,250	55,255	47,294
Printing and Mailing	42,240	49,073	56,100	48,562	50,700
Subscription Fulfillment	11,785	12,322	12,315	12,528	12,500
Publication Award	1,000	1,000	1,000	-	1,000
Publication Reserve	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>3,800</u>
<b>TOTAL EXPENSE</b>	<u><b>201,625</b></u>	<u><b>192,317</b></u>	<u><b>222,135</b></u>	<u><b>185,046</b></u>	<u><b>208,350</b></u>
<b>NET INCOME (LOSS)</b>	<u><u>\$ 65</u></u>	<u><u>\$ 20,969</u></u>	<u><u>\$ (1,885)</u></u>	<u><u>\$ 49,481</u></u>	<u><u>\$ 0</u></u>

**Treasurer's Note:** As your Treasurer for the past 25 years I have had the opportunity, together with a dozen different Executive Committees, to establish a strong financial position for the Society of Rheology, as you can see from our 1996 year end report. It is my hope that future Executive Committees will continue this trend, not lose sight of the mission of the Society of Rheology, provide the membership with true value for their member dues and continue to be the number one Rheology Society in the world. It was a privilege to serve as your Treasurer over all these years. I leave this office in good standing which is very gratifying.

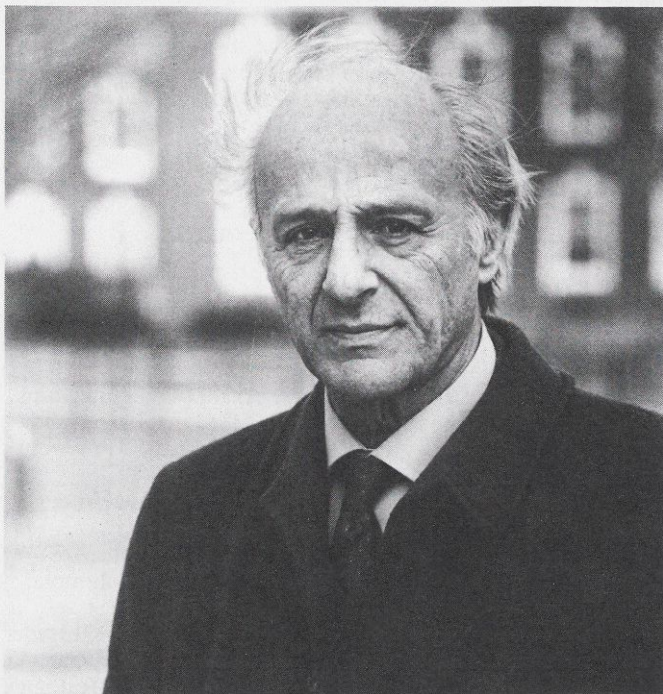
**Edward A. Collins**



**GIOVANNI ASTARITA**  
INTERNATIONAL SCHOLAR OF RHEOLOGY,  
CONTINUUM MECHANICS & CHEMICAL  
ENGINEERING

Giovanni Astarita, Professor of Chemical Engineering and Materials Science at the University of Naples, Italy, and Professor of Chemical Engineering at the University of Delaware for many years, died in Naples on April 28 following a stroke on April 24. He was 63 years old.

Professor Astarita earned his master's degree in chemical engineering from University of Delaware as a student of Bob Pigford, one of the founding fathers of chemical engineering. He received his doctorate at University of Naples in 1957 and joined the Engineering Faculty there. He was a superb teacher who updated the chemical engineering curriculum at the University of Naples, imparting to it an international flavor that has since been maintained. He was a visiting professor at Delaware during the 1965-6 academic year and annually in the fall semesters continuously from 1973 through 1995. The fall semester of 1996 was spent at Johns Hopkins University.



Professor Astarita's 8 books and over 200 papers revealed him to be a full renaissance scholar as his work spanned the full range of rheological, continuum mechanics and chemical engineering interests: heat and mass transfer, applied mathematics, chemical reaction engineering, thermodynamics, processing of polymers and powders. His 1967 book on mass transfer with chemical reaction was perhaps the most lucid exposition of this subject yet available and served as a philosophical tract on how rigorous engineering analysis of all kinds should be carried out. This first book, and a later one on mechanics of non-linear fluids, were translated into Russian, and the tract "Gas Treating with Chemical Solvents," co-authored with D.W. Savage and A.L. Bisio, was translated into Chinese. This latter work has had a very significant impact on the recovery of natural gas world-wide.

Professor Astarita's broad scientific interests and numerous accomplishments were recognized in the US by awards rarely given to Europeans: the Alpha Chi Sigma award from the AIChE in 1992 and election as a foreign associate of the National Academy of Engineering in 1994. In Italy, he was long a member of the Naples Academy of Science, Letters and Arts, and in 1995 he received the gold medal for excellence in research from the Federation of Chemical Industries. In honor of his 60th birthday, Chemical Engineering Science published a special issue of the journal.

While Professor Astarita's primary loves were clearly for his family and his profession, he also enjoyed being near the water and was an avid boater, swimmer, diver, spear-fisherman, and spent much of his spare time in a small fishing village, San Marco, on the south coast of his hometown of Naples. He was also an intense bridge player who attained the rank of Master in the Italian Bridge Federation.

Surviving family members are his wife of 38 years, Nerina, his mother Carmen, and two sons. Luca, a resident of Naples, is following in his father's professional footsteps as a chemical and polymer engineer. Tommaso is a professor of history at Georgetown University in Washington, DC.

We mourn the loss of a long standing and esteemed renaissance scholar, colleague, and friend. We are left enriched by his presence among us.

**His colleagues and former students.**

**RHEOLOGY BULLETIN  
AUTHOR GUIDELINES**

The Rheology Bulletin publishes papers on the applied aspects of Rheology which are intended for the non-specialist. (Archival research papers should be sent to the Journal of Rheology which is also published by the Society of Rheology.) Appropriate topics include the application of rheological principles to a specific system, instrumentation for rheological measurements, description of interesting rheological phenomena, and the use of well-established rheological techniques to characterize products, processes or phenomena. Papers that describe the historical aspects of the practice of rheology and how these may have influenced current trends are welcome. Also welcome are papers that address the present and changing status of rheological education including papers that describe recent or current innovation in the classroom or laboratory. Consultation with the Editor prior to manuscript submission is encouraged.

Papers should ordinarily not exceed about 4000 words in length. SI units should be used, but any standard style of writing may be employed. The article must have a clear message, and the significance of the work must be explicitly stated. Submit two copies of the manuscript at least three months prior to the issue in which publication is desired. The initial decision about suitability of publication will be made by the Editor. Both solicited and contributed papers may be sent to two or more reviewers. If the paper has been published previously in essentially the same form, permission for reprinting must have been obtained from the copyright holder.

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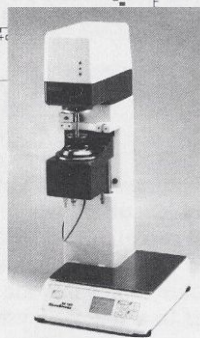
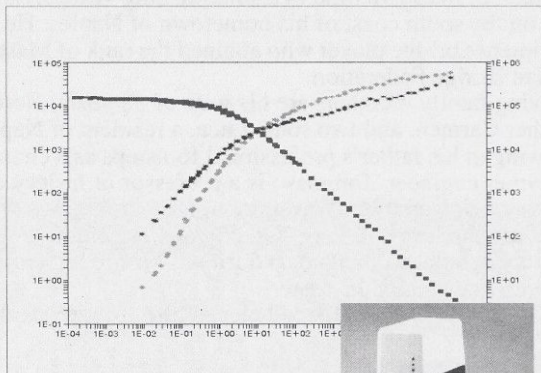
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## MINUTES OF THE BUSINESS MEETING February 18, 1997

The meeting was called to order at 5:30 p.m. in the San Luis Hotel, Galveston, Texas.

The minutes of the October 10, 1995 Business Meeting, which appeared in the January 1996 Rheology Bulletin, were approved as read.

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President Kurt Wissbrun announced future meetings of the Society:

Columbus, Ohio, October 19-23, 1997

Monterey, California, October 4-8, 1998

Madison, Wisconsin, October 17-21, 1999; and the

International Congress on Rheology, Cambridge, U.K. in August 2000. Members were invited to submit proposals to host meetings in 2001 and beyond. Kurt also announced that an electronic version of the Journal of Rheology would be provided to all non-member subscribers.

Morton Denn presented the Editor's report. The average time from manuscript receipt to publication in the Journal of Rheology is less than eight months for recent issues. Statistics relating to the source of papers were provided, and these included country and institution: academic, industrial, or government.

Ed Collins presented the Treasurer's report, which indicated that the financial condition of the Society remains healthy; details can be found in the Rheology Bulletin.

Jeff Giacomini reported for the Membership Committee, which he chairs. The Society reached 1620 members in December 1996; 1313 members had renewed their membership as of January 31, 1997.

Under new business, we discussed a recommendation of the Nominating Committee to increase the size of the Executive Committee from two Members-at-Large to three and eventually four members. Following discussion, those present indicated lack of support for an increase.

The meeting was adjourned at 6:30 p.m.

## Meeting Announcements

September 29-October 2, 1997: 8th International Conference on Mechanics and Technology of Composite Materials, Sofia, Bulgaria. Contact: Bulgarian Society of Rheology. Fax: 3592 703 433. E-mail: [mezi@bgearn.acad.bg](mailto:mezi@bgearn.acad.bg)

October 2-5, 1997: Biomedical Engineering Society meeting, San Diego. Session topics include "Cell mechanics and adhesion" and "Blood cell adhesion and flow." See web page at <http://bmes97.ucsd.edu/>

October 5-8, 1997: 47th Canadian Chemical Engineering Conference (includes several rheology sessions), Edmonton, Canada. Contact: Prof. S.G. Hatzikiriakos Dept. of Chem. Engrg., University of British Columbia, Vancouver, BC V6T 1Z4. Fax: (604) 822-6003.

October 9-10, 1997: Polyblends '97, SPE RETEC on Polymer Blends, Alloys and Filled Systems, Boucherville, Canada. Contact: Sylvie Lamontagne, NRC/IMI, 75, de Mortagne, Boucherville, Canada J4B 6Y4. Fax: (514) 641-5105.

October 22-24, 1997: '97 Int. Symposium on Fiber Reinforced Plastics/Composite Materials, Beijing, P.R. China. Contact Secretariat of China FRP Society, PO Box 261, Beijing 102101, China. Fax: (0086) 10 69132500.

November 16-21, 1997: International Mechanical Engineering Congress, Dallas, TX. Has symposium on CAE and Intelligent Processing of Polymeric Materials. Contact: Dr. L.S. Turng, C-MOLD, 31 Dutch Mill Rd., Ithaca, NY. Fax: (607) 257-6355.

June 8-12, 1998: 14th Annual PPS meeting, Yokohama, Japan. Contact: Dr. H. Yokoi/Secretariat, PPS-14, Institute of Industrial Science, University of Tokyo, 7-22-1 Roppongi, Minato-ku, Tokyo 106, Japan. Tel/Fax: 81 3 3402 6271.

## FOOD TECHNOLOGIST OPENING AT NABISCO RESEARCH

Change is constant. Especially when it comes to the tastes of America. At Nabisco, we know it's simply not enough to keep up with these changing tastes. We've got to stay one step ahead, forecasting future trends and predicting shifting consumer needs. Last year alone we invested 1.3 percent of sales in R&D, redefining the flavors of the industry at home, and around the world.

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**TITLE:** Food Technologist

**AREA:** Rheology & Texture

**START DATE:** Immediate

**EDUCATION:** BS+2 yrs experience, or MS+0 yrs experience in Food Science/Engineering or a related field.

**SPECIFIC KNOWLEDGE/ SKILLS:** Strong laboratory working skills. Knowledge of cereal based products and baking. Understanding of Food Chemistry, Cereal Chemistry. Working knowledge of college level physics and mathematics.

**POSITION SUMMARY:** Researches, develops procedures, and performs experiments related to the rheological and textural attributes of Nabisco's products. Provides support testing to research and operating company personnel. Develops and executes baking tests and relevant characterization (eg. moisture, pH, relative humidity, texture testing, rheological testing) for research efforts in rheology and texture. Summarizes data and provides initial interpretation to supervisor on an ongoing basis.

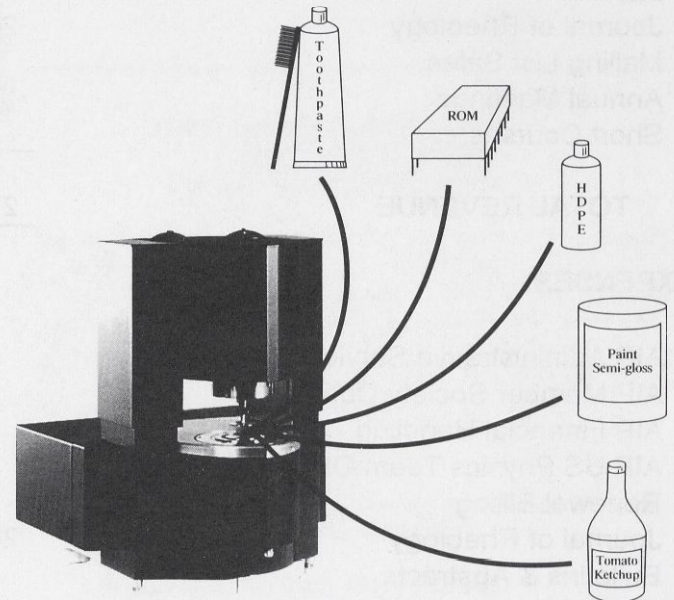
### RESPONSIBILITIES:

1. Using bench-top baking methods, execute experiments and follow-up characterization of high, intermediate and low moisture products. Determine the role of ingredients, mixing, and baking conditioning on finished product texture/structure.
2. Develop rheological and textural methodology to characterize savory dough rheology and crisp product textures. Relate results to finished product sensory attributes.
3. Perform other duties as required such as equipment and laboratory maintenance.

**PLEASE CONTACT:** Catherine Montgomery  
Nabisco, Inc., Staffing Center  
R.M. Schaeberle Technology Center  
200 DeForest Avenue, Department CM  
East Hanover, NJ 07936-1944  
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THE SOCIETY OF RHEOLOGY  
STATEMENTS OF REVENUE AND EXPENSE  
AS OF DECEMBER 1996

	<u>1995</u> <u>Budget</u>	<u>1995</u> <u>Actual</u>	<u>1996</u> <u>Budget</u>	<u>1996</u> <u>Actual</u>	<u>1997</u> <u>Budget</u>
<b>REVENUES</b>					
Dues	\$ 50,000	\$ 53,575	\$ 56,000	\$ 57,468	\$ 56,000
Interest	16,000	27,017	16,500	34,184	28,000
Journal of Rheology	201,690	213,286	220,250	234,527	208,350
Mailing List Sales	400	46	400	1,292	400
Annual Meetings	4,000	3,728	-	15,889	6,000
Short Courses	5,250	4,520	-	-	10,000
	<u>277,340</u>	<u>302,172</u>	<u>293,150</u>	<u>343,360</u>	<u>308,750</u>
<b>TOTAL REVENUE</b>					
<b>EXPENSES</b>					
AIP Administrative Service	7,000	7,000	7,000	7,000	7,000
AIP Member Society Dues	5,000	5,332	5,600	5,700	5,600
AIP Financial Handling	4,500	4,200	4,000	4,015	5,000
AIP US Physics Team Olympiad	1,000	1,000	1,000	1,500	1,500
Renewal Billing	1,500	971	1,500	1,842	1,500
Journal of Rheology	201,625	192,317	222,135	185,046	208,350
Bulletins & Abstracts	7,000	9,026	3,000	15,240	15,000
Short Courses	5,000	5,109	-	-	10,000
Bingham Award	3,500	2,500	-	-	6,000
Executive Cmt. Meeting	6,500	4,665	6,500	6,693	7,500
Pres. Discretionary Fund	1,500	-	1,500	-	1,500
Trea. Discretionary Fund	1,500	685	1,500	-	1,500
Program Chm. Discre. Fund	2,000	-	-	-	4,000
Secretarial Services	1,000	-	1,000	-	1,000
Mailing	5,000	1,247	2,000	311	3,500
Office Expenses	1,500	1,077	1,500	3,819	2,000
Banking Services	100	30	120	50	150
Liability Insurance	200	169	169	-	169
Membership Directory	3,500	1,292	6,500	12,685	5,500
Membership Brochure	1,000	-	1,000	-	1,000
Accountant	1,500	1,214	1,500	1,328	1,500
Student Member Travel Grant	5,000	6,437	5,000	4,695	10,000
Advance Deposit For Future Mtg.	1,500	3,000	2,500	-	3,000
Miscellaneous	5,500	4,511	1,500	2,111	1,500
	<u>273,425</u>	<u>251,782</u>	<u>276,524</u>	<u>252,035</u>	<u>303,769</u>
<b>TOTAL EXPENSE</b>					
<b>NET INCOME</b>	<u>\$ 3,915</u>	<u>\$ 50,390</u>	<u>\$ 16,626</u>	<u>\$ 91,325</u>	<u>\$ 4,981</u>
<b>NET ASSETS AT YEAR END</b>		<u>\$ 406,311</u>		<u>\$ 497,636</u>	