

# RHEOLOGY BULLETIN

Publication of The Society of Rheology, Inc.

Vol. 59 No. 2



July 1990

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## 62nd ANNUAL MEETING SANTA FE, NEW MEXICO OCTOBER 21-25, 1990

This meeting is being held in conjunction with the Society of Engineering Science at the Sweeney Center in Santa Fe. The technical program and abstracts for each society are included in this mailing. All technical sessions are open to registered conference participants. Each society will conduct a separate business meeting and banquet.

Information on registration, housing, local transportation, and other items of general interest is enclosed. The social program is intended to showcase the rich influence of Spanish and Pueblo Indian culture on Santa Fe Style. **The hotels will be very busy in October, so register now.**

For additional information, contact the individuals in charge:

### Technical Program Chairman:

Montgomery T. Shaw  
IMS, U-136  
University of Connecticut  
Storrs, CT 06269-3136  
Telephone: (203) 486-3980  
FAX: (203) 486-4745

### Local Arrangements Chairman:

Andrew M. Kraynik  
Division 1511  
Sandia National Laboratories  
Albuquerque, NM 87185  
Telephone: (505) 844-9696  
FAX: (505) 846-0295

## RHEOLOGY SHORT COURSE

A two-day short course, *Introduction to Practical Melt Rheology: Measurement, Interpretation & Application*, will be taught by Prof. Donald G. Baird and Dr. Edward A. Collins, and will begin on Saturday, October 20. A complete description and registration information are enclosed.

## BEER SESSION

A Beer Session on "Electrorheological Fluids - The Promise and the Problems" is scheduled for Wednesday evening.

## INSTRUMENT EXHIBIT

Several companies will exhibit rheological instrumentation at the Sweeney Center.

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RHEOLOGY BULLETIN  
Andrew M. Kraynik, Editor  
Division 1511  
Sandia National Laboratories  
Albuquerque, New Mexico 87185  
Telephone: (505) 844-9696 (Editor)  
Telephone: (505) 844-8872 (Secretary)  
FAX: (505) 846-0295

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## GUY C. BERRY 1990 BINGHAM MEDALIST

The Bingham Medal for 1990 will be awarded to Professor Guy C. Berry of Carnegie-Mellon University for major contributions to the molecular understanding of rheological behavior in polymer systems, ranging from dilute solutions to melts and from flexible chain polymers to stiff-chain, rod-like polymers. He is a superb experimentalist with sound theoretical instincts--working with structurally well-defined materials, choosing experiments with an eye toward clean interpretation, and using theory, when available and appropriate, with imagination and good judgement.

Solutions and melts of flexible polymers have interested Professor Berry throughout his career. In 1968 he and T. G. Fox published what is still the definitive work on the factors that govern the viscosity of polymer melts and concentrated solutions. Though nominally a review, that contribution contained much original work, including the proposal that the viscosity of branched polymers is an exponential function of branch length as well as a wide-ranging and critical examination of diluent effects. Both ideas have evoked a considerable theoretical and experimental literature, and have motivated work that continues to the present.

About the same time, Berry began an extensive investigation of thermodynamics and flow behavior in dilute polymer solutions. His beautiful studies of linear and star-branched polymers have remained for many years the "primary standard" for judging dilute solution theories.

Berry turned his attention to more concentrated solutions in order to clarify the influence of chain dimensions on viscosity and to explore the molecular-weight and concentration dependence of a broad range of rheological properties. Through shear creep and recovery experiments, he has demonstrated the utility of a "critical strain" criterion for the onset of nonlinear response. He has combined those results with a simplified form of the BKZ constitutive equation to provide a general framework for systematizing the rheological behavior of flexible chain liquids.

Professor Berry's work in recent years has dealt with heterocyclic condensation polymers, some of which are regular enough and rigid enough to approximate molecular rods. They can form ordered (nematic) solutions and are typically subject to strong intermolecular forces of electrostatic origin. Sorting

out structure and thermodynamic properties has been a difficult undertaking but is essential to obtaining a deep understanding of rheological behavior.

Armed with methods and skills that took years to develop, Professor Berry and his group have created a unique and systematic body of results on the rheology of rod-like polymer solutions. An especially valuable contribution has been his contrast and comparison of flexible-chain and rod-like polymer rheology. He has demonstrated that isotropic solutions of rod-like polymers obey the same laws (with appropriately redefined coefficients) as flexible polymers. He has also demonstrated and documented the qualitative differences in linear response that develop above the ordering transition. He has then gone on to show that the nonlinear behavior at large strains and elevated shear rates settles back toward the isotropic solution and flexible polymer forms. This is truly trail-blazing work, summarized in his lecture at a recent Faraday Discussion.

Like Professor Berry's earlier work on solutions and melts of flexible polymers, the results he has obtained on rod-like polymers are sought by industrial researchers concerned with processing this new and important class of polymers. Guy Berry will be awarded the Bingham Medal to honor these more recent contributions as well as his career-long endeavor to bring a deeper understanding to the molecular origins of rheological properties.

## Nominations for the 1991 Bingham Medal

Nominations for the 1991 Bingham Medal should be submitted to the committee chairman **before January 15, 1991**. Please note that this may be the only notice concerning the nomination. The committee chairman is:

Dr. Ronald G. Larson  
AT&T Bell Laboratories  
Room 6E, 600 Mountain Avenue  
Murray Hill, NJ 07974  
(201) 582-6158

When submitting nominations, please observe the following brief guidelines, which have been condensed from the formal guidelines listed in the July 1988 Rheology Bulletin.

Nominations shall include:

- 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 contribution in advancing the science of rheology,
- d. a list of publications and up to three reprints,
- e. supporting letters from other rheologists that address the nominee's contributions.

The complete guidelines can be obtained by contacting Ron Larson.

TWO-DAY SHORT COURSE  
INTRODUCTION TO PRACTICAL MELT RHEOLOGY  
MEASUREMENT, INTERPRETATION & APPLICATION

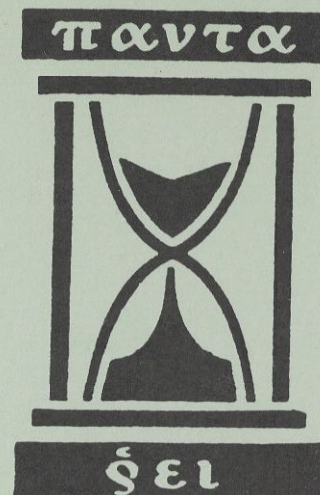
THE  
SOCIETY  
OF  
RHEOLOGY

BY  
PROFESSOR DONALD G. BAIRD  
VIRGINIA POLYTECHNIC INSTITUTE  
BLACKSBURG, VA

AND  
DR. EDWARD A. COLLINS  
CONSULTANT  
AVON LAKE, OHIO

TO BE HELD SATURDAY AND SUNDAY  
OCTOBER 20 AND 21, 1990

ELDORADO CLARION  
309 WEST SAN FRANCISCO  
SANTA FE, NEW MEXICO  
87501



*In conjunction with the 62nd Annual  
Meeting of the Society of Rheology*

COURSE DESCRIPTION

*This course is designed for scientists, engineers and other individuals who request and use rheological properties obtained from internal or external service laboratories as well as those directly involved in running a rheological laboratory. It is intended for those who must make decisions about processing problems and those who desire a basic understanding of the flow behavior of polymeric systems, methods used to characterize these materials and their practical significance. It is not intended for those who desire a quantitative knowledge of rheology.*

*In short, this course addresses what rheology is, what measurements should be made for specific applications, what they mean and how to use this information for quality control, equipment design or in general to solve practical problems.*

*There are many characterization techniques available that are used to assess differences in molecular structure and architecture of polymer systems. However, the measurement of the rheological properties of polymeric systems may be one of the most powerful and useful techniques. Numerous cases exist where the molecular weight and its distribution for two polymers are identical, but the processing behavior is very different. It would appear that only the non linear rheological properties are sensitive to the subtle changes in molecular structure.*

In this course we introduce the types of rheological experiments and the associated material functions which are available. The types of instruments which are used to carry out these experiments are also discussed. Next, the sensitivity of rheological properties to such factors as molecular weight distribution, branching and chain structure is considered. Finally, several case studies are presented which are concerned with the sensitivity of rheological properties to differences in polymer processability.

### SPECIAL SYMPOSIA

In conjunction with the Short Course, the 62nd Annual Meeting of the Society of Rheology will be held October 22-25. Registration for this meeting will be handled separately. Details can be obtained from Dr. Andrew Kraynik Sandia Corp. (505)844-9696.

### REGISTRATION

The fee for the two day course and lecture notes is \$300.00 prior to Sept. 15, 1990. A late registration fee of \$325.00 is acceptable thereafter. 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 Dr. Edward A. Collins, 255 Glenview Dr., Avon Lake, Ohio 44012. Further information can be obtained from Dr. E.A. Collins (216)933-6308 or Prof. Donald G. Baird (703)231-5998.

Reservations for lodging at the Eldorado should be made by the participants. A block of rooms has been reserved so mention the Society of Rheology when making reservations. (505)988-4455 - FAX (505)988-4455 X 125.

### COURSE OUTLINE

#### Day 1

- |                |  |
|----------------|--|
| I 8:30-10:15   | Introduction to Rheology<br>Newtonian Fluids<br>Non-Newtonian Fluids - Flow Phenomena  |
| II 10:30-12:00 | Rheological Experiments - Material Functions<br>Steady State and Transient Shear<br>Steady State and Transient Elongation<br>Dynamic Oscillatory<br>Types of Extensional Flows |
| III 1:15-2:15  | Material Functions Continued<br>Examples of Material Functions - Film<br>Blowing, Processing Aides   |
| IV 2:30-3:15   | Rheological Methods and Instrumentation<br>Instrument Selection  |
| V 3:30-5:00    | Rheological Methods and Instrumentation<br>Examples - Coating, Lubrication, Polymer melts,<br>Elastomers.<br>Interpretation of data  |

## COURSE OUTLINE

### Day 2

- VI 8:30-10:15 Rheology as a Characterization Tool  
Test Selection and Interpretation
- VII 10:30-12:00 Sensitivity of Rheological Properties to  
Molecular Weight, MWD, Branching and  
Temperature; Time Temperature - Super  
Position; Solvent effects
- VIII 1:15-2:15 Case Studies - Rheology as a Characterization  
and problem solving tool  
Blown. film.
- IX 2:30-4:00 Miscellanous Topics: Liquid Crystalline Polymers;  
Thermo Setting Systems; Polymer Blends; Role of  
Processing Aides in Extrusion; Dynamic Mechanical  
Analysis of Solid Polymers.

Sessions start at 8:30AM and continue to 5:00 PM on Saturday and  
end 4:00 PM on Sunday.

REGISTRATION FORM

RHEOLOGY SHORT COURSE

Saturday/Sunday October 20 and 21, 1990

Eldorado Clarion  
309 West San Francisco  
Santa Fe, New Mexico  
87501

Tel (505)988-4455 FAX (505)988-4455 X 125

NAME \_\_\_\_\_

RESIDENCE ADDRESS \_\_\_\_\_

COMPANY AFFILIATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

BUSINESS PHONE ( \_\_\_\_\_ )  
area code

RESIDENCE PHONE NUMBER ( \_\_\_\_\_ )  
area code

DATE OF ARRIVAL \_\_\_\_\_

\*\*\*\*\*

Please return this registration form together with payment to;

Dr. Edward A. Collins  
255 Glenview Dr.,  
Avon Lake, Ohio  
44012  
(216)933-6308

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## GENERAL INFORMATION

### 62nd Annual Meeting of THE SOCIETY OF RHEOLOGY Santa Fe, New Mexico October 21-25, 1990

This meeting is being held in conjunction with the Society of Engineering Science. Each society is organizing a separate technical program, business meeting, and banquet. Technical sessions are open to all registered conference participants.

**Location:** All technical sessions for both societies will be held at the Sweeney Convention Center, 201 West Marcy Street, Santa Fe, NM 87504-0909, FAX: (505) 984-6679.

**Registration:** Please return the enclosed registration form and your check to A. M. Kraynik before September 14 to avoid late fees. On-site registration will be provided as follows:

Sunday, October 21	Hilton of Santa Fe	4:00 pm to 8:00 pm
Monday, October 22	Sweeney Center	8:00 am to 5:00 pm
Tuesday, October 23	Sweeney Center	8:00 am to 5:00 pm
Wednesday, October 24	Sweeney Center	8:00 am to 3:00 pm

**Accommodations:** Reservations must be made through the Sweeney Center on the enclosed form before September 14 to avoid *substantially higher room rates*. It is essential, especially if you plan an extended stay, to make reservations as soon as possible. Except where noted, all hotels will offer the convention rates for extended stays *on a space available basis*. Rooms have been reserved at the following hotels (single/double, rooms available at conference rate, approximate distance to Sweeney Center).

Hilton of Santa Fe, 100 Sandoval St.	\$60/\$70	140	3 blocks
<i>Room rates are \$96/\$96 on Friday and Saturday nights.</i>			
Eldorado, A Clarion Hotel, 309 W. San Francisco St.	\$95/\$95	100	3 blocks
Hotel St. Francis, 210 Don Gaspar Ave.	\$70/\$80	35	4 blocks
La Fonda, 100 E. San Francisco St.	\$65/\$75	75	4 blocks
Inn of the Governors, 234 Don Gaspar Ave.	\$58/\$68	35	5 blocks
High Mesa Inn, Best Western, 3347 Cerrillos Rd.	\$45/\$45	100	5 MILES

*The High Mesa Inn will provide limited van service to downtown Santa Fe.*

**MAKE YOUR RESERVATIONS NOW**

**Airport Transportation:** Santa Fe is about 60 miles from the Albuquerque International Airport. Shuttlejack offers one-way, non-stop, scheduled service to *downtown* Santa Fe for \$20 per person. This service can be reserved by contacting Shuttlejack directly within 30 days of arrival (1-800-452-2665, 243-3244 in Albuquerque, 982-4311 in Santa Fe). Shuttlejack guarantees seating when reservations are made at least 24 hours in advance.

The Avis car rental location at the *Albuquerque Airport* will offer any available car to meeting participants for the special rate of \$29 per day with 150 free miles per day. Reservations must be placed through the Albuquerque Avis Office at (505) 842-4080 during normal business hours.

Taxi fare from the Albuquerque airport to Santa Fe is about \$80.

**Parking:** There is a daily parking fee at the Hilton of Santa Fe (\$3.50) and the Eldorado (\$3.95). Parking at the Sweeney Center is \$3.00 per day.

**Sunday Evening Reception:** There will be a welcoming reception at the Hilton of Santa Fe from 7:00 to 10:00 pm, cash bar.

**Monday Evening Reception at the Palace of the Governors Museum:** Enjoy a fully catered reception from 7:00 to 9:00 pm with hot hors d'oeuvres, wine, and beer while viewing the exquisite collection of New Mexican artifacts.

**General Business Meeting:** The annual business meeting of The Society of Rheology will be held at the Sweeney Center on Tuesday, October 23 at 6:10 pm.

**Banquet:** The Bingham Award Banquet will be held at the Eldorado Hotel on Tuesday, October 23 at 8:00 pm. A hosted cocktail hour will begin at 7:00 pm. If you plan to attend, please indicate so on the enclosed Conference Registration Form. The Banquet fee is not included in the conference registration fee.

**Beer Session:** A Beer Session on "Electrorheological Fluids - The Promise and the Problems" will be held at the Hilton of Santa Fe on Wednesday, October 24 at 8:00 pm.

**Museum Passes:** Each registered participant and spouse will receive a pass for free admission to all state museums: Palace of the Governors, Museum of Fine Arts, Museum of International Folk Art, and Museum of Indian Arts and Culture.

**Accompanying Persons:** The \$20 registration fee covers all receptions and the museum pass.

**Instrument Exhibits:** Several companies will demonstrate their products at the Sweeney Center.

*Typical Fall days are sunny, but evenings are brisk at 7000 ft.*



## Application for Membership in the SOCIETY OF RHEOLOGY

I wish to apply for membership in THE SOCIETY OF RHEOLOGY dating from January 19 \_\_\_\_\_

Name \_\_\_\_\_  
(Please print)

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

Telephone Number \_\_\_\_\_

E Mail Number \_\_\_\_\_

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
Experimental Methods	B
Foods	C
Inks, Paints, Coatings	D
Materials Science	E
Petroleum Production	F
Plastics Processing	G
Polymer Dilute Solutions	H
Polymer Melts and Conc. Solns.	I
Rational Mechanics	J
Rubbers and Elastomers	K
Solid Polymers	L
Suspensions	M
Theory of Viscoelasticity	N
Other _____	O

I understand that my regular member's subscription to the *Journal of Rheology* is for my personal use, and not for library use.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

Enclose remittance of \$40 for Regular Annual Dues (\$25 for Student and Retired Members) and mail to:

THE SOCIETY OF RHEOLOGY  
c/o American Institute of Physics  
335 East 45th Street  
New York, New York 10017

**AMERICAN INSTITUTE OF PHYSICS, INC.  
FOR  
THE SOCIETY OF RHEOLOGY**

**Statement of Receipts and Disbursements  
Year Ended December 31, 1989**

<b>Balance in Account on December 31, 1988</b>		<b>\$108,744.70</b>
<b>Receipts (January 1 - December 31, 1989)</b>		
Dues Collections - 1989	\$18,817.56	
- 1990	968.32	\$19,785.88
Subscription Collections - 1990		32,160.00
Sales of Mailing Lists		955.74
Interest		5,304.18
Journal of Rheology Page Charges		5,110.00
Florida Meeting (1988 Annual)		9,485.00
Short Course (Montreal)		4,036.25
		<u>76,837.05</u>
		<b>\$185,581.75</b>
<b>Disbursements (January 1 - December 31, 1989)</b>		
Charges for Dues Billing and Collection	\$2,978.25	
Charges for Preparation & Maintenance of Member Records	3,225.00	
Financial Handling (5/8% of business handled)	400.00	
Member Society Dues	2,126.00	
Renewal Billing	1,838.64	
1989 Membership Directory	2,266.24	
1989 Nominee Mailing	417.05	
Journal of Rheology - Editorial	8,295.00	
Journal of Rheology - Mailing and Marketing	884.34	
Administrative Services	2,100.00	
Short Course Expenses (Montreal)	4,274.17	
Commercial Press - Bulletin and Abstracts	6,448.74	
Liability Insurance	148.00	
Council of Scientific Society Presidents	100.00	
Physics Olympiad	500.00	
Bingham Award Expenses	809.40	
Miscellaneous Office Expenses	765.16	
Banking Services	14.00	
Executive Meeting and Discretionary	672.82	<u>\$38,262.81</u>
<b>Balance in Account on December 31, 1989</b>		<b>\$147,318.94</b>

Dr. Edward A. Collins  
Treasurer  
April 2, 1990

\*\*Not Adjusted for Final Variance

CONFERENCE REGISTRATION FORM

**THE SOCIETY OF RHEOLOGY**

OCTOBER 21-25, 1990

*Santa Fe, New Mexico*

Please complete and return to: A. M. Kraynik, The Society of Rheology  
Division 1511  
Sandia National Laboratories  
P. O. Box 5800  
Albuquerque, NM 87185  
(505) 844-9696 FAX: (505) 846-0295

Name (also for badge use): \_\_\_\_\_

Organization: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

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

FEES: IF RETURNED	BEFORE SEPTEMBER 14	LATE REGISTRATION
Full Conference Member	_____ \$ 80	_____ \$100
Non Member	_____ \$120	_____ \$140
Student	_____ \$ 30	_____ \$ 30
Retired Member	_____ \$ 30	_____ \$ 30
Banquet Ticket	_____ \$ 30	_____ \$ 30
Accompanying Person	_____ \$ 20	_____ \$ 20

Name of accompanying person (for badge use): \_\_\_\_\_

**Please indicate your attendance at the banquet on this form** to assist us in our planning. The registration fee does not include a banquet ticket.

*Refund Policy:* Cancellations postmarked before October 1 will be subject to a \$25 administrative charge. No refunds will be made after October 1.

**MAKE CHECK PAYABLE TO:** The Society of Rheology. Payment must accompany registration.

Check (US Dollars) \$ \_\_\_\_\_ is enclosed.

HOTEL REGISTRATION FORM

THE SOCIETY OF RHEOLOGY

OCTOBER 21-25, 1990

Santa Fe, New Mexico

RESERVATIONS MUST BE RECEIVED NO LATER THAN SEPTEMBER 14. After this date, reservations will be accepted on a space available basis and will not be subject to the convention rate. All reservations must be made through the Santa Fe Convention and Visitors Bureau using this form. Reservations cannot be made by telephone or by direct contact with the hotel.

You will receive acknowledgment from the Housing Bureau once this form has been processed, and a confirmation from the hotel to which you have been assigned, together with an explanation of that hotel's cancellation policy. Cancellations or changes should be made directly with the hotel.

Please complete this form and return to:

Santa Fe Convention and Visitors Bureau
P. O. Box 909
Santa Fe, New Mexico 87504-0909
FAX: (505) 984-6679

Last Name First Name M.I.

Address Telephone: Work Home

City State Zip Code Country

Please indicate first, second and third choices.

Table with 3 columns: Hotel Name, Single Rate, Double Rate. Rows include HILTON OF SANTA FE, ELDORADO HOTEL, HOTEL ST. FRANCIS, LA FONDA, INN OF THE GOVERNORS, and HIGH MESA INN.

All rooms subject to local tax of 9.625%. The Hilton and Eldorado charge for parking.

Arrival Date Number of Nights Roommate:

No reservations will be accepted without a deposit equivalent to one night's room charge. Please do not send cash. MAKE CHECK PAYABLE TO: Santa Fe Convention and Visitors Bureau.

Method of Payment: Check (US Dollars) \$

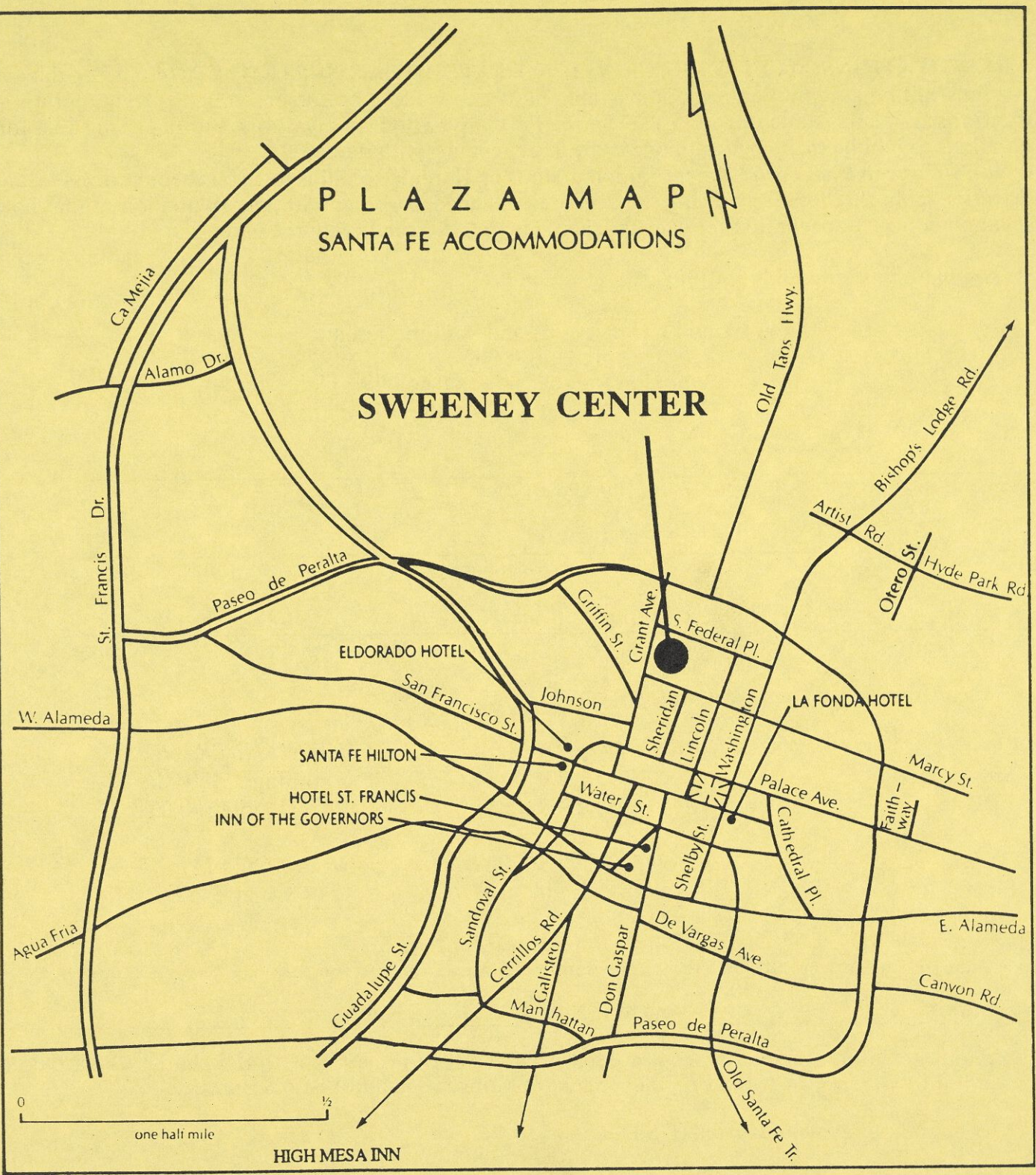
Credit Card # Expiration Date: (MC/VISA/AMEX)

Signature Date:

# PLAZA MAP

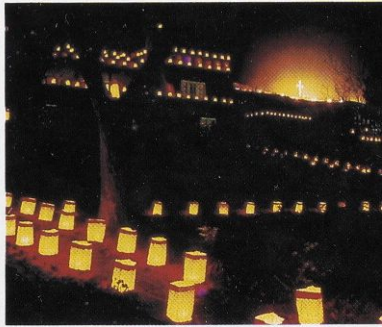
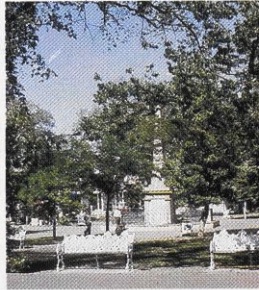
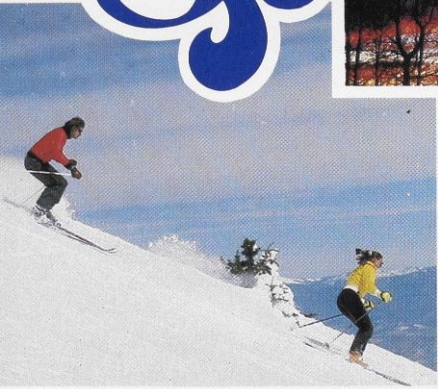
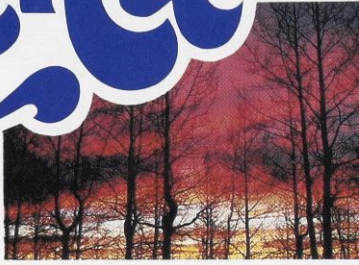
## SANTA FE ACCOMMODATIONS

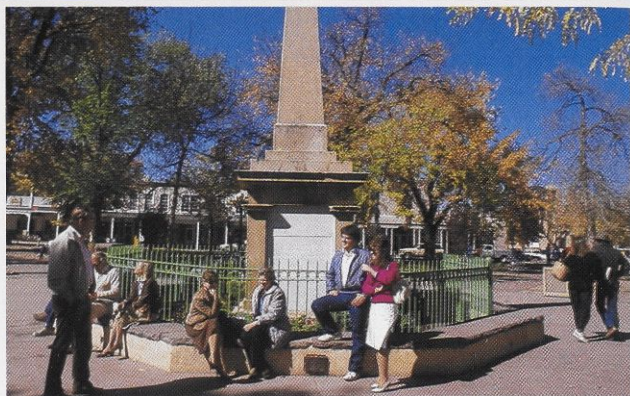
### SWEENEY CENTER



SANTA FE STYLE

# Santa Fe





## MUSEUMS

Downtown museums include the **Palace of the Governors**, offering world renowned exhibits on Southwestern history, and the **Museum of Fine Arts**, emphasizing the unique work of regional artists.

Located near the southeastern edge of Santa Fe, just off the Old Santa Fe Trail, lies a prestigious family of museums. The **Museum of International Folk Art** houses one of the world's largest collections of folk art. Children will delight in the Girard exhibit with its unusual arrangement of international folk art and toys. The new **Museum of Indian Arts and Culture** displays for the first time the celebrated collection of the state's Laboratory of Anthropology which was founded in 1931. This museum promises to be an honored showcase of Southwestern Indian pottery, jewelry, basketry, weaving and other traditional and contemporary arts.

The privately owned **Wheelwright Museum of the American Indian** offers exhibits of Native American art, both historic and contemporary. All are very special institutions interpreting the unique traditions, arts and cultures of New Mexico and the Southwest.

## INDIAN PUEBLOS

While touring the Santa Fe area, be sure to visit the oldest villages in America, the Indian pueblos. The pueblos offer you an opportunity to experience ritual dances and a way of life unchanged for hundreds of years. Also available are native Indian arts and crafts. Each pueblo is a sovereign entity and may have restrictions regarding photography and sacred areas. Contact the office of the Eight Northern Indian Pueblos Council, 852-4265 or the Governor of the pueblo you wish to visit for further information.

## RESTAURANTS

Santa Fe offers such a wide range of tantalizing eateries, there is sure to be something to please every taste and budget. There are over 200 restaurants to choose from, encompassing every imaginable cuisine.

Santa Fe dining is noted most for its Northern New Mexico cooking, a unique and delicious style quite different from Mexican food found elsewhere in the United States. Spicy chile, red or green, adds that special New Mexico flavor to traditional favorites. Each restaurant has its own secret recipe for chile, mild or hot, so be sure to try more than one while you're here.

Santa Fe is home to a number of superb continental and European restaurants. Fresh fish and seafood abound, as do superior cuts of steaks, lamb, pork and poultry. Italian, Oriental and Cajun cooking are also delightful options.

## CLIMATE

The city's high elevation of 7,000 ft. and the natural sunniness of the Southwest conspire to give Santa Fe a delightful four season climate. Spring brings some rain showers with crystal clear air. Summer days are warm and sunny with cool nights. Fall is a collection of vibrant color and brisk temperatures. In the winter the city is often covered with a white blanket of snow, but it doesn't linger long, allowing invigorating winter strolls. It is a rare day that the sun does not shine; we experience 330 days of sunshine per year.

## WARDROBE

Comfort and individuality are Santa Fe's fashion guidelines. Very few restaurants require jackets and ties for gentlemen. Summer attire should be lightweight, but always carry along a light wrap or sweater for the cool evenings. Warm clothing and boots are advised during the winter months.

## ACCOMMODATIONS

Every hotel and motel in Santa Fe offers its own special charm. With over 3,350 rooms city-wide, you can choose from quaint bed and breakfast inns, charming motels and hotels built in the special Santa Fe style. Wherever you stay in Santa Fe, count on only the best in service and care.

## TRANSPORTATION

Amtrak's Southwest Chief, where east and west meet, stops at Lamy, New Mexico. The Lamy Shuttle (982-8829) is available to transport passengers to downtown Santa Fe and area hotels, just 14 miles away.

### • AIRLINES

Ten major carriers fly regularly into the Albuquerque International Airport, only a 60 minute drive to Santa Fe. Santa Fe has a municipal airport which handles all types of private aircraft.

### • AUTOMOBILE RENTALS

Many national car rental companies have offices at the Albuquerque International Airport and in Santa Fe. Please consult your local directory for their toll free numbers.

### • BUSLINES

Shuttlejack (982-4311, 1-800-452-2665) departs from the Albuquerque Airport on a regular daily schedule and will drop you off in downtown Santa Fe at either the Hilton Inn or the Inn at Loretto. Special pick up and drop off arrangements can also be made with Shuttlejack.

Greyhound, Trailways and TNM&O (471-0008) offer station to station bus service between Albuquerque and Santa Fe as well as frequent service from the Albuquerque Airport to the Santa Fe station.

## CONVENTION CENTER

The Sweeney Center comfortably seats 800 for banquets, over 1,200 for theater style meetings and has 14,000 sq. ft. for exhibits. Ten additional rooms are also available for banquets and meetings from 10 to 100 people. Complete catering service is available.

Santa Fe Style—whatever your interest or taste, you'll discover it in Santa Fe, the oldest Capital City in the USA. The ambience of Santa Fe is reflected in the unique architecture throughout the city. Santa Fe Style is found around every corner and begins in the heart of Santa Fe on the Plaza. The Plaza has been the center of activity since 1610, witnessing more major historical, cultural and social events than anywhere in the Southwest. There's a season for everyone—try all four.

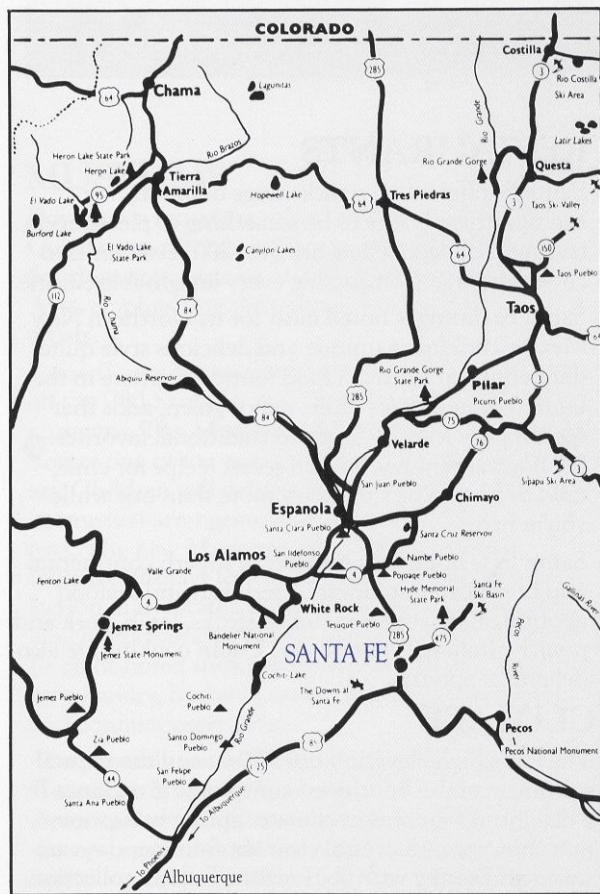
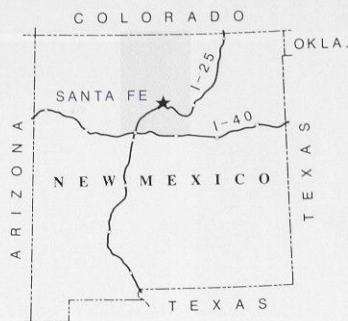
## Calendar of Events

**SUMMER** - World renowned activities, cultural events and performances such as:  
 Santa Fe Opera - rated among the top ten in the world  
 Santa Fe Chamber Music Festival  
 Indian Market  
 Spanish Market  
 Santa Fe Desert Chorale  
 Rodeo de Santa Fe  
 Summerscene Concert Series  
 River Rafting  
 Arts and Crafts Fairs  
 The Downs at Santa Fe—  
 thoroughbred quarter-horse racing

**FALL** - Fiesta de Santa Fe - oldest community celebration in the U.S.  
 Orchestra of Santa Fe  
 Santa Fe Film Festival  
 Festival of the Arts  
 Santa Fe Symphony  
 Ensemble of Santa Fe

**WINTER - & SPRING** - Ski Santa Fe—30 minutes from downtown, the ski area offers skiing for beginners to experts on a 12,000 foot mountain with a 1,650 foot vertical drop. For more information call 1-800-982-SNOW.  
 Chorus of Santa Fe  
 N.M. Repertory Theatre  
 Santa Fe Community Theatre  
 Santa Fe Concert Association  
 Santa Fe Symphony  
 Spring Arts Festival

Museums, world famous galleries, art openings, casual strolls through historic neighborhoods and Indian tribal events as well as many pleasurable hours of shopping are available year round.



FOR MORE INFORMATION CALL



Santa Fe Convention & Visitors Bureau  
 201 West Marcy Street  
 P. O. Box 909, Santa Fe, NM 87501  
 1-800-777-CITY  
 505-984-6760



**MINUTES OF THE  
EXECUTIVE COMMITTEE MEETING  
April 22, 1990**

The Executive Committee Meeting was called to order at 9:00 a.m. on April 22, 1990 in the MIT Chemical Engineering Building, Cambridge, MA. Officers present included: Bob Mendelson, Joe Goddard, Ed Collins, Art Metzner, John Dealy, Bob Prud'homme, Henning Winter, and Andy Kraynik.

Minutes of the October 22, 1989 Executive Committee Meeting as printed in the January 1990 Rheology Bulletin were corrected to read that the auditing committee should consist of the past president and the vice president.

Art Metzner, Editor, provided a status report on the Journal of Rheology, which is now being published by AIP. This publishing venture is providing significant financial opportunity, but it brings increased responsibilities to both the Society and the Editor. Issues regarding publication quality and speed are being addressed. The time required to publish papers in the Journal has been reduced to about nine months. The AIP has initiated a marketing plan for the Journal. Additional members for the Editorial Board are being sought.

Ed Collins, Treasurer, reported a balance of \$147,318.94 as of December 31, 1989. This balance does not reflect a \$21,991 bill, which is in dispute, from John Wiley & Sons, the previous publisher of the Journal. The publishing change is requiring increased financial reporting from AIP and closer monitoring of their budgeting and financial procedures.

The Bingham Award Committee nomination of Professor Guy C. Berry was considered and accepted.

The Secretary reported that both ballots submitted to the membership had passed. One of these establishes a Meetings Policy Committee. The other deletes Article III.2 concerning Sustaining Members and replaces it with one establishing Corporate Associates.

The Audit Committee reported that it had reviewed and approved the financial procedures of the Society. It will study financial procedures of societies of similar size to determine if alternative methods should be considered.

Andy Kraynik reported on local arrangements for the Santa Fe Meeting and conveyed that the technical program being developed by Monty Shaw was progressing well. The 1991 annual meeting will be held in Rochester, New York with Bruce Hartmann as technical program chairman and Glen Pearson as local arrangements chairman. The XIth International Congress on Rheology will be held in Brussels, Belgium in August, 1992. It will be followed by a winter meeting in Southern California in 1993. The regular 1993 annual meeting will be held in Boston. Suggestions for host locations beyond 1993 are welcome.

A detailed report on Membership Committee activities, which was prepared by Jeff Giacomini, was read. Statistics supplied by AIP indicate a significant decline in membership since 1988 from 1190 members to the current 1059 members. To reverse this trend, the committee recommended several activities including increased recruitment of graduate students

and increased recruitment of non-members attending annual meetings.

Joe Goddard reported that 45 members had responded to a questionnaire addressing the "Planning of Future Meetings." Those responding were generally in favor of poster sessions, were receptive to joint meetings with other societies, and were interested in considering other locations in the West for annual meetings.

Kurt Wissbrun, our representative on the AIP Governing Board, reported by letter that AIP headquarters is moving to College Park, MD. In a policy change, AIP will pay interest on our account retroactive to January 1, 1990.

Greg McKenna reported by letter on activities involving the AIP Committee on Public Policy.

To enhance the prestige of the Bingham Award, it was moved that Article VIII.1 of the Society Rules be amended to read: "The Society shall award a medal, to be called "The Bingham Medal," and a prize of \$2500, for outstanding contributions to the field of rheology..." A ballot concerning this amendment will be mailed to the members.

The Executive Committee thanks Bob Armstrong for arranging to hold the meeting at MIT.

The meeting was adjourned at 4:45 p.m.

**SOCIETY OF RHEOLOGY  
MEETING ANNOUNCEMENTS**

**63rd ANNUAL MEETING  
SOCIETY OF RHEOLOGY  
Rochester, NY  
October 20-24, 1991**

The 63rd Annual Meeting of The Society of Rheology will be held at the Holiday Inn Genesee Plaza in Rochester. Symposia on the viscoelastic properties of solid polymers, composites, rheology of emulsions and dispersions, and polymer processing are planned. For additional information contact the organizers:

*Technical Program Chairman:*

Bruce Hartmann, Code R31  
Naval Surface Warfare Center  
10901 New Hampshire Ave.  
Silver Spring, MD 20903-5000  
Telephone: (202) 394-2629  
FAX: (202) 394-2414

*Local Arrangements Chairman:*

Glen H. Pearson  
Eastman Kodak Co.  
Rochester, NY 14652-3701  
Telephone: (716) 722-9138  
FAX: (716) 722-7072

**XIth INTERNATIONAL CONGRESS ON  
RHEOLOGY**

**Palace of Congresses  
Brussels, Belgium  
August 17-21, 1992**

This meeting is scheduled to be followed by The International Congress of Theoretical and Applied Mechanics in Israel. The Palace of Congresses is a very comfortable and fully equipped meeting center located in the heart of Brussels and within walking distance of a number of large hotels. Student rooms will also be available at the University of Brussels.

The meeting will be co-chaired by Professor M. J. Crochet (Louvain-la-Neuve) and Professor J. Mewis (Leuven). The first circular will be mailed in September, 1990.

**ANNOUNCEMENTS OF OTHER MEETINGS OF  
POSSIBLE INTEREST TO RHEOLOGISTS**

September 3-7, 1990: Edinburgh, U.K. The Golden Jubilee Conference of the British Society of Rheology and the Third European Rheology Conference. Enquiries should be sent to: Dr. C. J. S. Petrie, Department of Engineering Mathematics, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, England. Email to: Chris\_Petrie@Newcastle.AC.UK on the EARN/BITNET networks or, on JANET, Chris\_Petrie@U.K.AC.Newcastle. Telephone: 44 (0) 91-222-6000, Ext. 6230; FAX: 44 (0) 91-261-0191.

September 27-29, 1990: International Regional Meeting on Rheology and Polymer Processing organized by The Korean Society of Rheology and The Polymer Processing Society will be held in Seoul, Korea. Further details can be obtained from Dr. Kwang Ung Kim, Polymer Processing Laboratory, KIST, Seoul 136-791, KOREA. Telephone: (82) 2-962-8801 ext, 3441; FAX: (82) 2-963-4013.

October 24-26, 1990: 38th Rheology Symposium of the Society of Rheology, Japan. In Tsukuba. Information is available from the society's secretary, Professor Kunihiro Osaki, Institute for Chemical Research, Kyoto University, Uji, Kyoto 611, Japan.

December 3-6, 1990: "Experimental Identification of the Mechanical Characteristics of Composite Materials and Structures" will be held in St. Etienne, France. Contact: Professor A. Vautrin, Department of Mechanical and

Materials Engineering, Ecole des Mines de St-Etienne, 42023 St. Etienne Cedex 2, France.

January 15-17, 1991: "Response of Shear Flows to Imposed Unsteadiness" will be held in Aussois, France. Contact: Dr. G. Binder, Institut de Mécanique de Grenoble, B.P. 53 X, 38041 Grenoble Cedex, France.

February 17-20, 1991: 14th Annual Meeting of the Adhesion Society will be held in Clearwater, FL. Deadline for the submission of abstracts (1 page) is August 1, 1990. For additional information contact Howard M. Clearfield, IBM T.J. Watson Research Center, P.O. Box 218, M/S 38-145, Yorktown Heights, NY 10598, (914) 945-3202.

April 21-24, 1991: 7th Annual Meeting of the Polymer Processing Society will be held in Hamilton, Ontario. Contact: Prof. J. Vlachopoulos, Department of Chemical Engineering, McMaster University, Hamilton, Ontario, Canada L8S 4L7.

May 1991: 18th Annual Meeting of the Society of Rheology, Japan. In Kyoto. For information see October 24-26, 1990.

July 15-18, 1991: "Rheology of Polymer Melts" will be held in Prague. Send inquiries to: 14th Discussion Conference, P.M.M. Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague, Czechoslovakia.

October 7-9, 1991: The 22nd Midwestern Mechanics Conference will be held at the University of Missouri-Rolla. For further information contact Prof. R. C. Batra, or Mr. W. L. Ries, Continuing Education, University of Missouri, Rolla, MO 65401. Telephone: (314) 341-4132.

**CHANGE OF ADDRESS**

If you are moving, be sure to inform:

Ms. Margaret Ensley  
American Institute of Physics  
335 East 45th Street  
New York, NY 10017