

# RHEOLOGY BULLETIN

Publication of The Society of Rheology, Inc.

Volume 37 No. 2



May, 1968

## FIFTH INTERNATIONAL CONGRESS ON RHEOLOGY

KYOTO INTERNATIONAL CONFERENCE HALL  
KYOTO, JAPAN

OCTOBER 7-11, 1968

The honorary president of the Congress is John D. Ferry who was president of the Society when the Congress was organized. Because of the timing of the Congress, the 1968 Annual Meeting of the Society will be deferred until the 1969 Winter Meeting in Williamsburg, Virginia.

### *Fifth Congress Charter Flight*

Reservations continue to come in for the charter to Japan. A few weeks before publication of this bulletin, there were about twenty-five reservations left. It is strongly recommended that those who may have put off their reservation send *at least* the deposit to Mr. Robert E. Coulehan, 13 Allen Street, Dobbs Ferry, New York, 10522 as soon as possible. Final payment must be made not later than July 1, 1968. The charter fare is \$495 per person. The charter will leave New York City on Saturday morning, October 5, 1968. Stops will be made in Cleveland, Seattle, and Tokyo. The flight arrives at Osaka International Airport during the early evening of October 6. The return flight leaves Tokyo on October 26 and arrives in New York City on the same day.

### *Co-Chairmen of the Organizing Committee*

Masao Horio, Kyoto, Japan  
Bun-ichi Tamamushi, Tokyo, Japan

For information concerning the program registration, accommodations, or other items, address all correspondence to:

Masao Horio  
Department of Polymer Chemistry  
Kyoto University  
Kyoto, Japan

### *Program*

The scientific program of the International Congress on Rheology will consist of general lectures, invited papers, and contributed papers.

No official language will be designated, but English is recommended.

Social and ladies' programs will be arranged parallel to the scientific program.

Hotel accommodations will be arranged by the Organizing Committee. The average room rates of western style hotels in Kyoto range between \$8.00 for a single bedroom with bath and \$13.00 for a twin bedroom with bath or shower.

Information about Japanese rheologists, their locations, and their fields of interest is given on page 5.

## 39TH ANNUAL MEETING THE SOCIETY OF RHEOLOGY, INC.

Williamsburg, Virginia  
January 13-15, 1969

### *Program Committee*

J. G. Brodnyan (Chairman), Research Laboratories, Rohm and Haas Company, Spring House, Pennsylvania 19477.

M. L. Dannis, Goodrich Research Laboratories, Brecksville, Ohio 44141.

C. L. Sieglaff, Diamond Alkali Research Center, P. O. Box 348, Painesville, Ohio 44077.

J. R. Knox (Local Arrangement Chairman), Avisun Corporation, Marcus Hook, Pennsylvania 19061.

### *Program*

Two invited hour lectures will be given: (1) R. F. Scott, California Institute of Technology will lecture on "The Application of Rheology to Soil Mechanics" and (2) I. M. Krieger, Case Western Reserve University will discuss the rheology of latexes.

Evening discussions are planned covering the topics: (1) "The Influence of Entanglement on Flow" and (2) "The Rheology of Dispersions". The first topic will have E. A. Collins as discussion leader. The discussion leader for the second session will be announced.

### *Publication*

Authors are urged, but not required, to publish their papers presented at the meeting in the Transactions of the Society of Rheology. Manuscripts should be sub-

## RHEOLOGY BULLETIN

Raymond R. Myers, Editor  
Department of Chemistry  
Kent State University  
Kent, Ohio, 44240

mitted to the editor, R. R. Myers, Chemistry Department, Kent State University, Kent, Ohio, 44240. Acceptance for publication will be decided by the editor, in consultation with assistant editors for Volume 12 and referees appointed by him for each manuscript.

### *Instructions for the Preparation of Abstracts*

Abstracts which are to appear in the November Bulletin shall be no longer than 500 words; if they exceed that length, the program chairman or the editor will trim to the nearest paragraph or sentence, depending on how the message is affected. Equations are to be used sparingly; if they are used, they must be in a form that permits them to be posted on the printer's copy (one display line equals twenty words plus five for each additional line), and they may be left out.

These rules are necessary in order to conserve time and money and to improve accuracy.

Type the following information, double spaced, on heavy white bond paper 8½ x 11 inches, using a fresh ribbon: title, your name, and the name (only) of your institution. The abstract must appear alone on the sheet, never as part of a letter to the program chairman, and preferably in duplicate. (except for the spacing, this instruction is in the form recommended for abstracts).

Note abstract deadline: Oct. 1, 1968.

### BINGHAM AWARD COMMITTEE

L. J. Zapas (Chairman), Rheology Section, National Bureau of Standards, Washington, D.C. 20234.

J. H. Elliott, Hercules Research Center, Wilmington, Delaware 19899.

H. Markovitz, Carnegie-Mellon University, 4400 Fifth Avenue, Pittsburgh, Pa. 15213.

L. E. Nielsen, Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, Missouri 63166.

N. W. Tschoegl, California Institute of Technology, Pasadena, California 91109.

K. C. Valanis, Department of Engineering Mechanics, Iowa State University, Ames, Iowa 50010.

In the report of the 1967 Award Committee (published in January 1968 Bulletin), it was recommended that Committee members have tenure. As this recommendation has been adopted by the present Executive Committee of the Society, N. W. Tschoegl and K. C.

Valanis have been appointed for a three-year term. L. J. Zapas, J. H. Elliott, and L. E. Nielsen, who were on the Award Committee last year, have agreed to serve again this year to provide continuity within the committee. In addition, H. Markovitz, the recipient of the Bingham Medal Award in 1967 and currently the Vice-President of the Society, will serve on the Award Committee as the representative of the Executive Committee.

### SOCIETY OF RHEOLOGY EXECUTIVE COMMITTEE

October 22, 1967

Sheraton-Park Hotel, Washington, D.C.

Executive Committee Present: R. S. Marvin, T. L. Smith, R. R. Myers, A. F. Lewis, J. C. Miller

Others Present: R. E. Coulehan, J. L. Erickson, A. Peterlin, J. L. Johnson, S. Prager, S. Matsuoka, W. Koch, J. Elliot

1. The meeting was opened by President Marvin at 2:00 P.M.
2. The minutes of the previous meeting in Santa Barbara were approved as distributed.
3. The charter flight to Japan was discussed by R. Coulehan in some detail. The cost per seat is set for \$495 for 153 people. It is expected that the contract with Northwest will be signed about March 1, with reservations due by February 15.
4. Meeting dates for 1968 were discussed because of the short time between return of the charter flight and the beginning of the Atlantic City meeting. T. L. Smith suggested that the Winter Meeting be cancelled. After some discussion, a motion was made to postpone the Atlantic City meeting by at least one month. The motion was defeated. A motion to hold the Fall meeting was passed. The Fall meeting will be held in Atlantic City, if the business meeting confirms this choice.
5. The Fall meeting for 1969 will be held in Minneapolis, Minnesota.
6. Amendments to the AIP Constitution were discussed by Wm. Koch, who stressed the service functions of AIP. Amendments to the Constitution were passed. A discussion about the Service Contract brought out some questions which were not answered. The Service Contract was tabled for further consideration by the Executive Committee.
7. T. L. Smith presented information from the Bingham Medal Committee on the method of choosing a medalist. The report of the committee was accepted and commended to the next Executive Committee for action.
8. A question arose as to whether page charges on invited papers should be imposed.
9. Editor R. R. Myers reported that 28 papers were in process.
10. Membership does not appear to be growing this year.

11. Resignation of Scott-Blair was read by the Secretary and after some discussion, it was felt some plan should be devised to keep him as a member.
12. Treasurer Armand Lewis reported on the budget and said there would be \$7,000 at the end of the year.
13. The page charge was set at \$15.00 for 1968.
14. The meeting was adjourned late.

John C. Miller  
Secretary

## ANNUAL BUSINESS MEETING OF SOCIETY OF RHEOLOGY

National Bureau of Standards  
Gaithersburg, Maryland

October 23, 1967

The meeting was called to order by President Marvin at 1:30 P.M. The minutes of the previous meeting were approved as printed in the Bulletin.

The Secretary's report on the status and activities of the Society was presented.

The Treasurer's report on expenditures for 1967 and the proposed 1968 budget was explained and a motion to accept the budget was passed.

President R. S. Marvin explained that page charges on the Transactions were being paid at the rate of 85-90%. This is an exceptional rate and will result in a change of the page charge in a year.

Certain constitutional amendments to the American Institute of Physics Constitution were explained by the President. The major change being that dues of \$1.00 for each member of a Member Society are entered in the Constitution. A motion to approve the changes was made, seconded, and passed.

Editor R. R. Myers reported on publications. He requested at least three copies of papers from the authors. This means sufficient copies are available to get quick reviewing and rapid publication.

R. E. Coulehan explained the charter flight to Japan for the International Rheological Congress.

Announcements about the 1968 meeting in San Diego and Fall 1968 meeting in Atlantic City were made. It was pointed out that the Atlantic City meeting conflicts with the International Congress and it may be difficult to get members to the meeting. A motion for no change in the meeting date was defeated. A motion for a single meeting next year during the interval December 1968 to February 1969 was passed unanimously.

E. A. Collins gave an opinion that the technical program was too one-sided and that more distribution of papers on experimental results was needed. President Marvin pointed out that the program was the result of only accepting contributed papers.

The meeting was adjourned at 2:15 P.M.

John C. Miller  
Secretary

## RELATION OF THE SOCIETY OF RHEOLOGY TO THE AMERICAN INSTITUTE OF PHYSICS

*(A message from your editor)*

The AIP has asked the Society to ratify its new contract with constituent societies in a manner which, in the judgment of your executive committee, will have the effect of increasing slightly the cost of their handling our business. When the new service contract was tendered last year, we asked the AIP director William Koch for clarification of certain points, and these have now been cleared with the committee.

A year or so in the future, you will observe that our payments to the AIP exceed our present expenses by several hundred dollars. This increase will not be a true or significant measure of the changes in contract details, for it must be recalled that the Society recently instituted a page charge for the Transactions, and the pro-rated service charge by the AIP for handling up to \$40,000 for us would amount to \$200.

Publication is a ticklish business. The AIP governing board is concerned about the effect of the Institute's publishing commitments on her financial solvency for this reason: through the media of journals, patents, preprints, microforms, manuscript tapes, and translations, the AIP does an annual volume of \$5.25 million. Part of the present program was launched using NSF funds, and questions have arisen concerning whether the seed money should be paid back. Moreover, with an unclear copyright situation, the AIP stands to lose protection against infringement if unfavorable decisions are made on the legal front.

The bearing of the AIP publication problem on our Society is that not only do we need the expert counsel of the AIP for our own publication activity, but the AIP needs the backing of her adhering societies to ensure that future experiments which may lead to profitable ventures are made with in-house funds. Such is the price of success.

RRM

## ANNOUNCEMENTS

1. The 1969 Fall Meeting will be held at the St. Paul Hilton Hotel, Minneapolis, Minnesota, October 19-22, 1969.
2. The Plastics Design Engineering Subcommittee of The Plastics Institute is now planning the third in a series of conferences which deal with engineering design problems in plastics. This conference will be held in Cranfield, England, January 6-8, 1969. The meeting will cover recent and novel work which will lead to better engineering design in plastics. Topics include:
  1. Engineering properties of plastics
  2. The effect of processing on properties
  3. Engineering design methods

The committee aims to publish the proceedings in Plastics and Polymers (the new title for the Institute Transactions and Journal). For further information, contact: Mr. J. N. Ratcliffe, Secretary, 11 Hobart Place, London, England.

AMERICAN INSTITUTE OF PHYSICS, INCORPORATED FOR SOCIETY OF RHEOLOGY

Statement of Receipts and Disbursements

Year Ended December 31, 1967

BALANCE IN ACCOUNT — JANUARY 1, 1967 \$14,264.04  
 RECEIPTS (JANUARY 1 - DECEMBER 31, 1967)

Dues Collections:

1967 Dues	\$1,707.63	
1968 Dues	7,057.84	8,765.47

Income from Winter Meeting:

Registration of New Members	\$ 215.00	
Registration of Regular Members	290.00	
Registration of Non-members	110.00	
Sale of 55 Banquet Tickets	330.00	
Gratuity from Instron Corporation	200.00	1,145.00

Income from Fall Meeting:

Regular Members — 103 at \$8.50	\$ 875.50	
Member and Registration — 16 at \$18.50	296.00	
Nonmembers — 20 at \$13.50	270.00	
Student Nonmembers — 4 at \$8.50	34.00	
Contribution to Bottle Bar	8.55	1,484.05

Interest on U. S. Government Bond\*

TOTAL RECEIPTS

38.74  
\$25,697.30

DISBURSEMENTS (JANUARY 1 - DECEMBER 31, 1967)

Charge for Dues Billing and Collection	\$ 305.45	
Charge for Maintenance of Society List	544.60	
Contribution for Support of AIP-1967	732.71	
Winter Bulletin	368.96	
Winter Meeting		
Preparations	52.52	
Refreshments	313.74	
Projector and Projectionist	175.00	
Banquet	285.52	
New Membership Dues to AIP	150.00	
Printing	181.03	\$3,109.53

Spring Bulletin	233.97	
Fall Meeting Bulletin	317.38	
Fall Meeting		
Pre-meeting Expenses	17.69	
Meeting Expenses	65.20	
Sheraton Park Hotel	661.98	
Projector and Projectionist	348.27	
Charter Buses	125.00	1,769.49

38th Annual Meeting Booklet	209.55	
Ballot Mailing	79.05	
5th International Congress—Mailing	98.00	386.60

Transactions of the Society of Rheology

Schedule A	6,029.92	6,029.92
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Editorial Expenses — R. R. Myers

Secretarial Services	558.75	
Office Expense	327.17	885.92

Secretarial Duties—E. Wolf	31.04	
Membership Roster	88.36	
Incorporation Expense	103.00	
Other	34.42	256.82

TOTAL DISBURSEMENTS

BALANCE IN ACCOUNT DECEMBER 31, 1967

\$12,438.28  
\$13,259.02

\*Bingham Fund: \$1,000.00 U.S. Government Bond 3<sup>7</sup>/<sub>8</sub>%—Due May 15, 1968

SCHEDULE A

Statement of Receipts and Disbursements  
Year Ended December 31, 1967

INCOME		
Publication Charges (Vol. 11 Nos. 1 & 2)		\$2,775.00
Reprint Sales (Vol. 11 Nos. 1 & 2)		170.57
	Total Income	<u>\$2,945.57</u>
EXPENSE		
Printing Volume 10 No. 1		\$3,382.50
Printing Volume 10 No. 2		1,862.00
Per Page Charge for Volume 11 Nos. 1 & 2		2,634.15
Per Subscription Charge for Volume 11 Nos. 1 & 2		581.40
Printing Reprints		170.57
Order Handling Charge		129.06
Addressing List		5.00
Kraft Envelopes		19.53
Affixing Labels		6.50
Stuffing and Mailing		45.64
Postage		139.14
	Total Expense	<u>\$8,975.49</u>
	Net Expense	<u>\$6,029.92</u>

RHEOLOGY IN JAPAN

By Atsuhiko Soda<sup>1</sup>, Sumio Kusamizu<sup>2</sup>, R. Byron Bird<sup>3</sup>, and  
John D. Ferry<sup>3</sup>

Many members of the Society of Rheology who attend the Fifth International Congress in Kyoto, October 7-11, 1968, may wish to acquaint themselves in advance with current rheological activity in Japan. To assist them in identifying areas of rheological investigation in Japan, which cover a very wide range of both theoretical and experimental work, we have prepared a list of rheologists arranged geographically and classified according to their primary current interests. We are greatly indebted to Professors M. Horio, H. Kambe, T. Mizushima, and the Executive Committee of The Congress in Japan for reviewing and correcting this list, and to Professor S. Oka for a supplementary list of biorheologists.

The investigators are classified by geographical district and city of location. Their fields of interest are identified in two ways: numbers code the type of problem studied, and letters code the type of material. The code is listed following the names.

Many of these investigators have published in the Rheology issues of the Journal of the Society of Materials Science, Japan (Zairyo), e.g., May, 1964, April, 1965, May, 1966, and July, 1967. The papers are in Japanese but are accompanied by long abstracts in English. Many polymer rheologists publish English summaries of their current work also in the annual volume "Reports on Progress in Polymer Physics in Japan," distributed and sold by the Association for Science Documents Information, Oh'okayama, Meguro-ku, Tokyo.

<sup>1</sup>Toyo Rayon Company  
<sup>2</sup>Japan Synthetic Rubber Company  
<sup>3</sup>University of Wisconsin

CITY	NAME	AFFILIATION	FIELD
<b>HOKKAIDO DISTRICT</b>			
Sapporo	Kaneko, Motozo	Hokkaido University	5, A
Sapporo	Tanaka, Hidejiro	Hokkaido University	5, A
Sapporo	Nakagawa, Tsurutarou	Hokkaido University	3, 5, 6, A
Sapporo	Hideshima, Mitsuo	Hokkaido University	5, A
<b>TOHOKU DISTRICT</b>			
Sendai	Umeya, Kaoru	Tohoku University	5, C, E, F
Sendai	Murakami, Kenkichi	Tohoku University	3, 5, A, B
<b>KANTO DISTRICT</b>			
Tokyo	Kambe, Hirotarou	University of Tokyo	3, 5, 6, A, C
Tokyo	Wada, Yasaku	University of Tokyo	5, A, B, C
Tokyo	Ototake, Tadashi	University of Tokyo	3, 6, C
Tokyo	Ogino, Kazuyoshi	University of Tokyo	1, 5, A
Tokyo	Mori, Yoshio	University of Tokyo	3, 6, A, C
Tokyo	Okano, Koji	University of Tokyo	1, 5, 7, A, B
Tokyo	Ishikawa, Kinzo	Tokyo Inst. of Tech.	5, 6, 7, A
Tokyo	Hata, Toshio	Tokyo Inst. of Tech.	5, 6, A, B
Tokyo	Tomita, Yukio	Tokyo Inst. of Tech.	2, 3, 5, 6, A, C
Tokyo	Ito, Shiro	Tokyo Inst. of Tech.	4, 6
Tokyo	Oka, Syoten	Tokyo Metropolitan University	1, 2, 3, A, G
Tokyo	Yamamoto, Misazo	Tokyo Metropolitan University	1, 2, 3, A, B
Tokyo	Chikahisa, Yoshiaki	Tokyo Univ. of Agr. and Tech.	1, A
Tokyo	Arai, Teikichi	Keio University	5, 6, A
Tokyo	Saito, Nobuhiko	Waseda University	1, 2, 3, A, B, G
Tokyo	Tamamushi, Bun-ichi	Tokyo Women's College	5, C
Tokyo	Miyake, Akira	International Christian University	1, 7, A
Tokyo	Ito, Katsuhiko	Hosei University	6, A
Tokyo	Ukihashi, Hiroshi	Asahi Glass Company	6, E
Tokyo	Wada, Eiichi	Nihon University	1, 7, A
Tokyo	Iwayanagi, Shigeo	Institute of Physical and Chemical Research	5, 7, A
Tokyo	Fukada, Eiichi	Institute of Physical and Chemical Research	3, 5, 7, A, B, G
Tokyo	Takeda, Tomomi	Electric Comm. Lab.	6, A
Tokyo	Sone, Toshimaro	Yukitijirushi Nyugyo Co.	5, G
Tokyo	Sasaguri, Kiichiro	Asahi Chem. Ind. Co.	5, 7, A
Tokyo	Nagamatsu, Kazuo	Asahi Chem. Ind. Co.	5, A
Kiryu	Hayashi, Shizuo	Gumma University	1, A, B

CITY	NAME	AFFILIATION	FIELD
Kawasaki	Ninomiyama, Kazuhiko	Japan Synthetic Rubber Co.	5, 6, A, B
Yokohama	Ueda, Shigetoyuki	Textile Res. Inst.	5, A
Yokohama	Kishimoto, Akira	Toyo Seikan Co.	5, G
Yokohama	Kudo, Hideaki	Yokohama National University	5, D
Shimodate	Maeda, Yasushi	Hitachi Ltd. Shimodate Fact.	5, A
Hitachi	Nakada, Osamu	Hitachi Ltd. Central Res. Lab.	1, 2, 3, A, B
Hino	Nakamura, Koichi	Konishiroku Photo Ind. Co.	5, 6, A
<b>CHUBU DISTRICT</b>			
Nagoya	Nagasawa, Mitsuru	Nagoya University	5, 7, A, B, G
Kanazawa	Hirai, Eiji	Kanazawa University	6, A
Nigata	Shishido, Shunsuke	Nigata University	5, A
Ueda	Sato, Yoshiyasu	Shinshu University	1, B
<b>KANSAI DISTRICT</b>			
Kyoto	Horio, Masao	Kyoto University	5, A
Kyoto	Mizushima, Tokuro	Kyoto University	4, 6
Kyoto	Tamura, Mikio	Kyoto University	1, 5, A
Kyoto	Ozaki, Kunihiko	Kyoto University	5, A
Kyoto	Kawabata, Sueo	Kyoto University	1, 5, B
Kyoto	Onogi, Shigeharu	Kyoto University	3, 5, 7, A, B
Kyoto	Nishijima, Yasunori	Kyoto University	7, A
Kyoto	Kawai, Hiromichi	Kyoto University	5, A
Kyoto	Sawaragi, Yoshikazu	Kyoto University	5, A
Kyoto	Murayama, Sakuro	Kyoto University	5, F
Kyoto	Akai, Koichi	Kyoto University	5, F
Kyoto	Michiyoshi, Itaru	Kyoto University	6
Kyoto	Okada, Kiyoshi	Kyoto University	6, E
Kyoto	Tokuoka, Tatsuo	Kyoto University	2
Kyoto	Tokumaru, Hidekatsu	Kyoto University	5, B
Kyoto	Yoshioka, Naoya	Kyoto University	2, 6
Kyoto	Kobayashi, Keinosuke	Kyoto University	7, A
Kyoto	Kurata, Michio	Kyoto University	1, 5, A
Takatsuki	Inagaki, Hiroshi	Kyoto University	1, 7, A
Takatsuki	Gotoh, Rempei	Kyoto University	5, 7, A, C
Takatsuki	Tsuji, Waichiro	Kyoto University	5, A
Takatsuki	Kotaka, Tadao	Kyoto University	1, 5, A
Uji	Yamada, Ryo	Nippon Rayon Co.	7, A
Otsu	Kawaguchi, Tatsuro	Toyo Rayon Co.	5, A
Otsu	Takahashi, Masao	Toyo Rayon Co.	5, 7, A, B
Otsu	Matsuhisa, Seikichi	Toyo Rayon Co.	3, 4, 6, A
Osaka	Fujita, Hiroshi	Osaka University	1, 2, 5, A, B, G
Osaka	Ishida, Yoichi	Osaka University	7, A
<b>CHUGOKU DISTRICT</b>			
Kurashiki	Nakayasu, Haruo	Kurashiki Rayon Co.	3, 5, A
Kurashiki	Matsumoto, Masakazu	Kurashiki Rayon Co.	5, A
Kurashiki	Oyanagi, Yasuji	Kurashiki Rayon Co.	5, A
<b>KYUSHU DISTRICT</b>			
Fukuoka	Mitsuishi, Nobuo	Kyushu University	4, C
Fukuoka	Takayanagi, Motowo	Kyushu University	3, 5, 7, A, B
<b>BIORHEOLOGISTS</b>			
Chiba	Inoue, Shunichi	Chiba University	7, G
Chiba	Saito, Soroku	Chiba University	3, G
Chiba	Nakamura, Jin	Chiba University	3, G
Fukuoka	Goto, Masayoshi	Kyushu University	5, G
Matsumoto	Azuma, Takehiko	Shinshu University	5, G
Miura	Hiramoto, Sachio	University of Tokyo	5, G
Nagaoka	Wakiya, Shoichi	Niigata University	1, G
Nagoya	Iino, Saburo	Nagoya University	3, G
Nagoya	Hashimoto, Yoshio	Nagoya University	3, G
Nagoya	Yamaguchi, Chu	Nagoya University	3, G
Osaka	Kamiya, Noburo	Osaka University	3, 5, G
Sendai	Suwa, Norio	Tohoku University	3, G
Tokushima	Kuroda, Kaichiro	Tokushima University	7, G
Tokyo	Isogai, Yukihide	The Jikei University School of Medicine	3, G
Tokyo	Kanai, Hiroshi	Sophia University	6, G
Tokyo	Saito, Masao	University of Tokyo	1, G
Tokyo	Nagashima, Chosetsu	Komazawa University	3, G
Tokyo	Baba, Kensuke	National Cancer Center	7, G
Tokyo	Watanuki, Tetsu	The Jikei University School of Medicine	5, G
Tokyo	Yoneda, Mitsuki	Ochanomizu University	3, G
Tokyo	Itoi, Motoo	Juntendo University	5, G
Ueda	Iizuka, Eisaku	Shinshu University	1, G

#### CODE FOR FIELDS OF INTEREST

##### ACTIVITIES

1. Molecular and Structural Theories (dilute polymer solutions, concentrated polymer solutions, polymer networks, suspensions, loaded polymers)
2. Continuum Mechanics (constitutive equations, relation to thermodynamics)
3. Solution of Problems in Deformation and Flow (stress, strain, rate of strain in various geometries)
4. Solutions of Problems in Non-Newtonian Flow with Heat Transfer, Mass Transfer, or Chemical Reactions
5. Experimental Studies of Viscoelasticity (Linear; Non-Linear)
6. Industrial Rheology and Processing Operations

7. Relations Between Deformation and Other Physical Properties (rheoptics, strain and flow birefringence, infrared spectra and x-ray spectra of deforming systems, dielectric properties of deforming systems, etc.)

##### MATERIALS

- A. Polymers (dilute solutions, concentrated solutions, melts, rigid polymers)
- B. Rubbers, Elastomers
- C. Pastes and Suspensions (paints, latices, printing inks, etc.)
- D. Metals
- E. Inorganic Non-Metals (glasses, ceramics, cement, concrete, etc.)
- G. Biological Materials (proteins, nucleic acids, polyelectrolytes, blood, other biological fluids)