Rheology Bulletin

The News and Information Publication of The Society of Rheology
Volume 75 Number 2 July 2006

Inside: Armstrong is the 2006 Bingham Medalist
Notable Passing: Arthur B. Metzner
3rd Annual European Rheology Conference

Rod climbing

is not a subtle effect, as demonstrated on the cover by Ph.D. student Sylvana Garcia-Rodriguez from Columbia. Ms. Garcia-Rodrigues is studying rheology in the Mechanical Engineering Department at the University of Wisconsin-Madison, USA. The apparatus shown was created by UWMadison Professors Emeriti John L. Schrag and Arthur S. Lodge. The fluid shown is a 2% aqueous polyacrylamide solution, and the rotational speed is nominally 0.5 Hz. Photo by Carlos Arango Sabogal (2006).

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The *Rheology Bulletin* is the news and information publication of The Society of Rheology (SOR) and is published twice yearly in January and July. Subscription is free on membership in The Society of Rheology.

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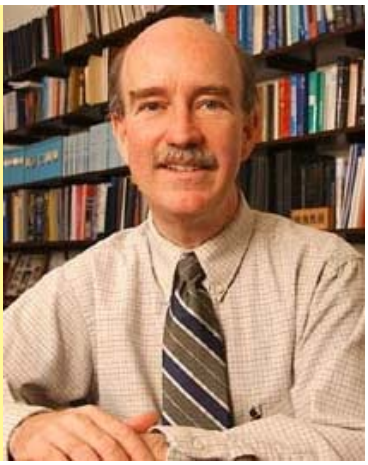
In mid-March 2006 SOR President Andy Kraynik announced that the Bingham Committee had selected Professor Robert C. Armstrong of MIT as the 2006 recipient of the Bingham Medal. The Bingham Medal, The Society of Rheology's highest honor, is given to a resident of the North American continent or a member of The Society who has made an outstanding contribution to the science of rheology or who has performed particularly meritorious service to The Society.

Armstrong will receive his medal at the 78th Annual Meeting of The Society of Rheology in Portland, Maine USA in October 2006. The Bingham lecture by Armstrong is scheduled for Tuesday 10 October 2006, and the award ceremony and celebration will take place at the Banquet on the same day. A detailed profile



Armstrong to receive 2006 Bingham Medal

Robert C. Armstrong is Chevron Professor and Head (for the last 10 years) of the Department of Chemical Engineering at the Massachusetts Institute of Technology, USA. Bob Armstrong received his B.S.ChE. from the Georgia Institute of Technology in 1970 and his Ph.D. degree from the University of Wisconsin, Madison less than three years later. His doctoral research at Wisconsin with Professor Bob Bird focused on the statistical mechanics of micromechanical models for dilute polymer solutions. In the thirty plus years since, his research interests have broadened to the development of constitutive theories for micro-structured liquids, experimental measurements in rheology and fluid mechanics, and computation of complex flows. According to long-time collaborator Bob Brown, now President of Boston University, "No other researcher in non-Newtonian fluid mechanics can claim either this range of activities or the resulting impact on practice and on other research programs."

All rheologists are familiar with the two-volume text *Dynamics of Polymeric Liquids*, by Bird, Armstrong, Ole Hassager and, for volume 2, Chuck Curtiss. DPL, as it is known, was originally published in 1977, and an extensively revised second edition of both volumes appeared in 1987. This two-volume classic covers fluid mechanics in volume 1 and focuses on kinetic theory in the second volume. According to Bob Bird, the idea for this project came from fellow graduate students Armstrong and Hassager. The purpose of writing DPL1 and DPL2 was the recognition by these talented students that there was no textbook available that addressed the molecular aspects of the rheology of polymer materials. The book was chosen as a "Citation Classic" in 1988, a designation given by Current Contents for papers or books that are highly cited in their fields. By 1988 when DPL was named a Citation Classic, volume 1 of the 1977 edition had been cited over 450 times, and volume 2 of that edition had been cited at least 315 times.

As a mentor, Armstrong's record is particularly noteworthy. His enthusiasm for research and academics has inspired a significant second generation of academic scholars at numerous universities, including faculty at such top schools as U.C. Berkeley (Muller), MIT (McKinley), Delaware (Beris and Shine), Columbia (Shapley), N. C. State (Khan) and Univerdidad Nacional del Sur, Argentina (Quinzani). With long-time collaborator Bob Brown, Armstrong influenced a generation of chemical engineers across

Bob and Debbie Armstrong and students at the 1993 SOR meeting in Boston as Armstrong ascends to the SOR presidency: Nancy Masley, Jeff Byars, Aparna Bhave, Suresh Ramalingam, Debbie Armstrong, Todd Salamon, Bob Armstrong.

the continents. Armstrong's family tree shows 46 direct graduate degree recipients (23 co-advised with Brown), 84 second-generation members, and 50 third-generation members.

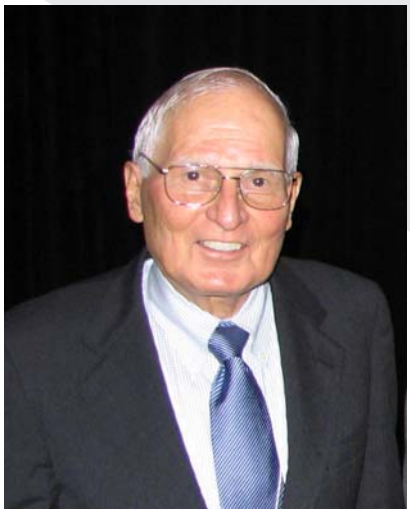
In service to The Society of Rheology Armstrong has also performed admirably. Armstrong was president of The Society from 1994-95, and served on the Executive Committee from 1992-97. He led the team that put on the 65th Annual Meeting of The Society of Rheology in Boston in 1993. In his time as President of the SOR Armstrong was responsible for two very important transitions. The first was a turnover in the position of Editor of the *Journal of Rheology*. In 1995 after ten years as Editor, Art Metzner sought to step down, and Armstrong devised a process to identify a new Editor who could sustain the high technical quality of the *JOR* as well as maintain the smooth operations of the *Journal*. Armstrong's process resulted in the highly successful 10-year tenure of Morton Denn as *JOR* editor from 1995 to 2005 (for which Denn was recognized with the SOR Distinguished Service Award in 2005). The process devised by Armstrong was followed once again in 2005 when Denn stepped down and the current editor, John Brady, was nominated to replace him.

A second important contribution of President Armstrong was the initiative to create The Society web pages (www.rheology.org), and the appointment of webmaster Albert Co. In 1995 Armstrong foresaw the importance of a web presence for The Society, and he wrote a message in the January 1995 issue of the *Rheology Bulletin* in which he asked for volunteers to build a Society website. Albert Co of the University of Maine was getting involved in website building for his home institution, and he expressed interest in helping, and he met with Armstrong at the SPE meeting that year in Boston. After that working lunch between Co and Armstrong, additional consultations with Chris Petrie (British Society of Rheology webmaster), some Executive Committee deliberations, and a intense summer of work by Co, the SOR website was born in late 1995. The SOR website has grown to become the main mechanism by which The Society keeps in touch with its members and society at large, keeps its records, plans and organizes its meetings, conducts its elections, and in general keeps itself afloat. Armstrong's vision on this issue (and Co's hard work, for which he was recognized with the SOR Distinguished Service Award in 1999) is a significant contribution to The Society.

Armstrong has received a wide variety of awards throughout his academic career including the AIChE Professional Progress Award (1992), the University of Wisconsin Distinguished Service Citation, 2001, and the MIT ChemE Outstanding Faculty Award, 1975. Armstrong is currently Chair of the Executive Committee of the Council for Chemical Research.

Bob Armstrong and colleagues after the SOR Meeting in Monterey, CA USA, October 1998: Jeff Giacomin, Jim Caruthers, Steve Granick, Bob Armstrong, and Pino Marrucci.

Bob in his Department Head office at MIT, playing Santa.



Arthur B. Metzner (1927-2006)

Arthur B. Metzner, distinguished rheologist, passed away on 4 May 2006 while in Washington D.C. representing The Society of Rheology. Art Metzner's impact on rheology was great, as a technical contributor, as a member and officer of The Society of Rheology, and as a mentor, friend, collaborator, booster, and steadying presence.

Art Metzner was born in Saskatchewan, and he spent his early years in the small town of Gravelbourg, Saskatchewan. He received his B.Sc. Degree in chemical engineering from the University of Alberta in 1948 and his Sc.D. from the Massachusetts Institute of Technology in 1951. He taught as an instructor at MIT and at Brooklyn Polytechnic Institute (now Polytechnic University) before joining the faculty of the University of Delaware in 1953, where he remained for the rest of his career, serving as department chairman from 1970 to 1977, and becoming professor emeritus after his retirement in 1993.

Mort Denn, like Metzner a former *JOR* Editor, calls Metzner "one of the giants of twentieth century engineering." In the 1950's Metzner understood that conventional fluid mechanics and heat transfer, based on Newtonian fluids, was not applicable to polymeric and colloidal systems, and he undertook the task of seeking engineering design procedures for non-Newtonian fluids within a framework that would be consistent with existing practice. Metzner and collaborators studied turbulent drag reduction, and their work contributed to techniques essential to modern oil pipeline practice today.

Metzner and his students attacked the second normal-stress measurement problem for steady shear starting in the early 1960's, and in a landmark 1969 paper with Bob Ginn he demonstrated that the full stress distribution, including the second normal stress difference, can be measured reliably in steady shear. Metzner and coworkers also contributed significantly to the study of dilute polymer solutions flowing through porous media, to understanding extensional flow especially of fiber suspensions, and he made seminal contributions to the understanding of the rheology of suspensions. The White-Metzner equation for stress is a feature of modern commercial computer codes for polymer processing applications.

During Metzner's ten years as Editor of the *Journal of Rheology* (1985-1995), he steadily improved the technical quality of the *Journal*, making it, by the end of his term, the most prestigious journal in the field of rheology. In operational matters, Metzner's personal touch left an indelible mark on a generation of authors and reviewers. Metzner acknowledged each review himself, often sending his signature postcard and including a kind word. This practice on the part of an established and renowned figure such as Metzner can be credited with contributing to the family feel of the rheological community, which extends to the present time.

One of the greatest challenges of Metzner's editorship was a crisis precipitated by a dispute with the *Journal*'s publisher at that time, John Wiley & Sons. The goal of the *Journal of Rheology* is to publish in a timely fashion the most cutting edge rheological research, without regard to journal size or

Attendees at the Bingham Banquet in Vancouver, B.C. Canada, 17 October 2005. Pino Marrucci, unknown, Art Metzner, Betty Metzner, Bob Mendelson, Pier Luca Maffettone.

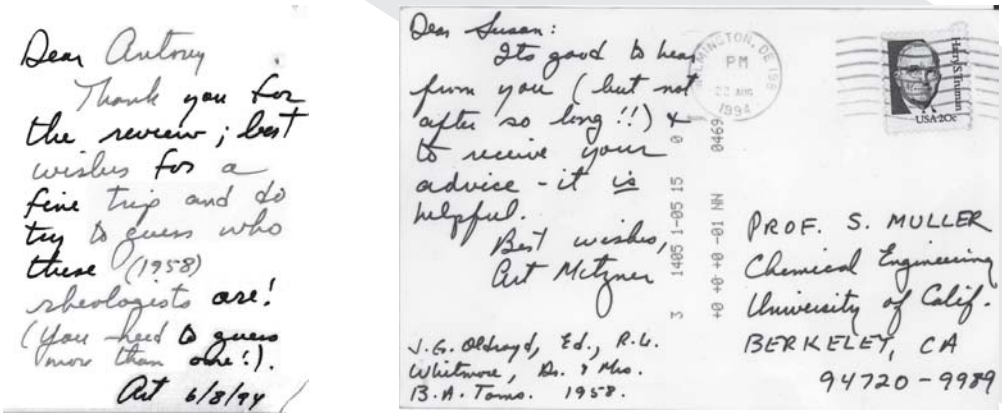
page numbers; the publisher preferred to put out a journal of a particular size and length, providing consistency of product in their view. In addition, The Society of Rheology has always been a frugal organization, and rising publication costs in the 1980's were straining relations between The Society and its publisher. At an SOR Executive Committee meeting at the Philadelphia airport presided over by SOR President John Dealy, the ExCom conducted a lively debate of the merits of moving the *Journal* to the American Institute of Physics rather than staying at Wiley, which had made some concessions in order to retain the *JOR*. The ExCom was deeply divided, particularly over the issue of the considerable financial risk of the proposal. Metzner was the last ExCom member to vote, and his positive vote made it 4 to 3 in favor of what has turned out to be a transformative decision for the SOR. According to former SOR President Dealy, *JOR* Editor Metzner was reluctant to make the change, given that he was the one who was going to have to manage the switch, and it turned out to be a major challenge for him. The first issue published by AIP had many problems, and it fell to Metzner to provide the oversight and intervention to ensure that the situation improved. Metzner's contributions were essential to the continued excellence of the *Journal of Rheology*. The changes in publishing practice at AIP, fought for by Metzner, subsequently benefited all journals published by the Institute.

Beginning in 2000 Art Metzner served as the SOR's representative to the American Institute of Physics Governing Board and Executive Committee. According to AIP Executive Director Marc Brodsky, at AIP meetings Metzner was the one who repeatedly brought the Executive Committee back to the important strategic issues whenever it strayed into the forest of details. Metzner was valued at AIP for his wisdom and clear thinking.

Metzner's colleague and collaborator at Delaware Antony Beris reports that Metzner was very active up to the time of his passing. He came very frequently to the department (twice or more a week), attended seminars, and interacted considerably with Beris and with the rest of the Delaware faculty. Beris and Metzner were writing a review on additives-induced drag reduction, and during 2005-6 Metzner quite vigorously collected information on the early history of this subject. Beris plans to continue this effort, a task made considerably more difficult and less pleasurable without Metzner's input and company.

Metzner was the recipient of the two highest awards offered by The Society of Rheology, the Bingham Medal (1977) and the Distinguished Service Award (1996). He was elected to the National Academy of Engineering, received the 1995 Chilton Award from the Wilmington section of the AIChE, and was the recipient of the University of Delaware's highest faculty honor, the Francis P. Alison

(continues page 21)



As Editor, Art Metzner had the personal touch, often sending acknowledgements by way of his special postcards, which depict from left to right: J. G. Oldroyd, A. B. Metzner, R. L. Whitmore, and Dr. and Mrs. B. A. Toms in 1958.

Rheology News

David James wins Mason Award of the Canadian Society of Rheology

Contributed by John M. Dealy

All prior recipients of the Mason Award of the Canadian Society of Rheology attended the 2005 awards dinner for David James. From left to right: Michael Williams, David James, Harry Goldsmith, John Dealy, and Pierre Carreau.

David F. James received the 2005 Mason Award of the Canadian Society of Rheology at a dinner in his honor at the McGill University Faculty Club on 25 November 2005. The award is named for Stanley G. Mason, who devoted his career to the study of microrheology. The first winner of the award, Harry Goldsmith studied with Mason and made his life's work the study of blood flow in the human body.

David James first became interested in rheology as a graduate student at Caltech and was honored for his many contributions to the flow and rheology of a wide range of complex fluids. He played a key role in the development of reliable techniques for measuring the extensional flow behavior of mobile liquids. He currently holds appointments as professor in the departments of mechanical and chemical engineering and is a Fellow of Massey College at the University of Toronto. He was Secretary of the International Committee on Rheology from 1988 to 2004 and is Past President of the Canadian Society of Rheology. He is a member of The Society of Rheology and has served on the Bingham Award Committee of The Society.

2006 SOR Publication Award Goes to Large Collaborative Team

The paper "Constriction flows of monodisperse linear entangled polymers: Multiscale modeling and flow visualization," *Journal of Rheology* **49**, 501-522 (2005) has been selected to receive the *Journal of Rheology* Publication Award for 2006. The authors are M. W. Collis, A. K. Lele, M. R. Mackley, R. S. Graham, D. J. Groves, A. E. Likhtman, T. M. Nicholson, O. G. Harlen, T. C. B. McLeish, L. R. Hutchings, C. M. Fernyhough, and R. N. Young.

The cited paper discusses a comprehensive set of experiments that seeks to link molecularly based model calculations to observed polymer behavior. The researchers synthesized large quantities of monodisperse polymers (order 10s of grams), and they conducted rheological observations using a sample-conserving complex flow cell, the Multipass Rheometer (Mackley et al. *J. Rheol.* **39**, 1293 (1995)). This flow cell is a slit-flow device with an 11/1 contraction and subsequent expansion. The flow is operated in a forward and reverse manner, reusing and preserving sample. Birefringence measurements were favorably compared with calculations made with the tube-based model of Likhtman and Graham (*J. Non-Newtonian Fluid Mech.*, **114**, 1 (2003)), which requires minimal parameter fitting. The results allow the authors to differentiate between flow effects that arise from chain orientation and those effects that are due to

stretch. The SOR Publication Award Committee was impressed with the scope of the project, which included challenges in polymerization, rheometric design and operation, and computation-modeling.

The *JOR* Publication Award is an annual recognition for an outstanding paper published in the *Journal* in the two preceding years. The Award carries a cash prize of $1000 that will be presented 10 October 2006 at the Awards Banquet at The Society of Rheology Annual Meeting in Portland, Maine USA.

Individual Access to *JOR-Online* Coming

At the 14 May 2006 Executive Committee meeting, the SOR ExCom voted to allow SOR members to subscribe individually to the online version of the *Journal of Rheology*.

Currently, access to the *JOR-Online* is through institutions only, for an annual subscription rate of $550 USD. Readers who are not affiliated with an institutional subscriber cannot currently access the online *Journal*. The new policy allows SOR members to pay an additional $40 USD annually to subscribe, allowing access to the entire *Journal* archive for one full year.

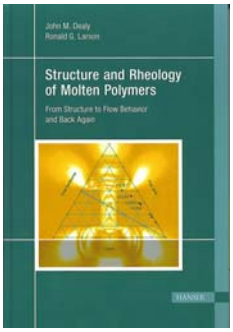
The Executive Committee plans for this policy to become effective at the start of 2007, in time to subscribe to *JOR-Online* Volume 51 (2007). The Executive Committee also voted to allow retired members to subscribe to the online *Journal* for free. Both of these new options will appear in the electronic membership renewal form. Further details will be posted to www.rheology.org.

2006 International Symposium on Applied Rheology held in Seoul

The Applied Rheology Center at Korea University, Seoul , hosted the 7th International Symposium on Applied Rheology 25 May 2006. Invited speakers included Manfred Wagner (Technische Universitat Berlin, Germany), Sung Hyun Kim (Korea Univer-

sity), Peter Scales (University of Melbourne, Australia), Wook Ryol Hwang (Gyeongsang National University, Korea), John F. Brady (California Institute of Technology, USA), Seong Jae Lee (University of Suwon, Korea), Robert Prud'homme (Princeton University, USA), and Hyun Wook Jung (Korea University). The purpose of this symposium is to bring together experts from around the world and from Korea to present their expertise to Korean academics and industrial personnel interested in applied rheology.

Professors Joona Bang, Jihyun Kim, and Hyun Wook Jung, all of Korea University, Seoul, enjoy the reception at the 7th ISAR meeting in May 2006.



New Book on Rheology of Polymer Melts

Bingham medalists John M. Dealy and Ronald G. Larson have published a new monograph, *Structure and Rheology of Molten Polymers* (February 2006, Hanser Publishers, Munich, $149.95 USD, www.hansergardner.com).

CALL FOR PAPERS

The *Rheology Bulletin* is seeking rheologists who have performed rheology outreach to the lay community or to K-12 schools to describe their efforts for the *Bulletin*. If you have some slimy experience you can share with our readers, please contact the *Bulletin* editor (fmorriso@mtu.edu).

Feature length articles (2400 words) on other topics of general rheological interest are also welcome.

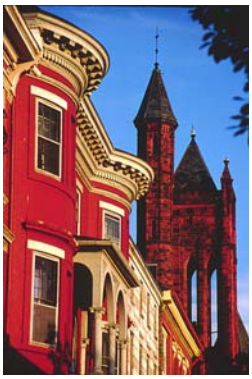
Join us in Portland

The 78th Annual Meeting of The Society of Rheology will take place 8-12 October 2006 in the scenic New England city of Portland, Maine, USA. The associated short course on "Rheology of High Interface Systems" by Gerald Fuller, Andy Kraynik, and Jan Vermant will be offered on 7 and 8 October 2006. Please plan to attend. All sessions will be held at the Holiday Inn By the Bay Hotel and Convention Center in downtown Portland (www.innbythebay.com), located within walking distance of the Old Port, Portland's working waterfront, and Arts District. The Technical Program for the meeting appeared in the January 2006 *Rheology Bulletin* and is available on the SOR website (www.rheology.org).

The Welcoming Reception for the meeting will be held from 7:00 pm to 9:00 pm on Sunday, October 8 in the Vermont room at the Holiday Inn By the Bay. The Society Luncheon will be held in the Casco Bay Exhibit Hall at the Holiday Inn By the Bay on Monday, October 9, beginning at 12:00 noon. The Society Reception will be held in the Portland Museum of Art on Monday, October 9, from 7:00 pm to 9:00 pm. The museum is located one block away from Holiday Inn By the Bay. The Bingham Award Reception will start at 7:00 pm on Tuesday, October 10 in the Connecticut/Rhode Island room at the Holiday Inn By the Bay. This will be followed by the Bingham Award Banquet honoring Professor Bob Armstrong of MIT at 8:00 pm in the Vermont room. Entry to the Reception has no charge, and the tickets to the Banquet can be purchased with meeting registration (see meeting registration page on the web).

All attendees are encouraged to attend the annual business meeting of The Society of Rheology on Tuesday, October 10, at 6:10 pm.

Photos courtesy of Convention and Visitors Bureau of Greater Portland



The business meeting will be held in the Massachusetts room at the Holiday Inn By the Bay.

The Holiday Inn By the Bay is approximately 10 minutes from the Portland International Jetport, which is served by Continental Airlines, Delta, Northwest, United Express, U.S. Airways, and JetBlue. Courtesy vans between the conference hotel and the jetport are available. Major rental car agencies are located at the jetport. Taxi fare from the jetport to the conference hotel is approximately $10.

Alternatively, attendees may fly to Boston, MA, which is just two hours south of Portland, or can travel to Portland by bus or train; see the web for details and for links to more information.

The conference rate for a standard room at the Holiday Inn By the Bay (two double beds) is $149 USD per night plus tax for single or double occupancy. Hotel reservations must be made directly with Holiday Inn By the Bay. Please reserve by 8 September 2006 and indicate that you are an attendee of the 78th Annual Meeting of The Society of Rheology to receive the conference rate. In the US or Canada, 1-800-345-5050 (toll free); other countries, 1-207-775-2311. Please make your reservation early. The week of October 8 will be a busy tourist time due to the beautiful fall colors in Maine at that time of year.

Local Arrangements:

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Portland 2006

SOR Short Course October 2006 on Rheology of High-Interface Systems



The short course at the Portland SOR Meeting will be on the rheology and structure of high-interface systems, for example foams, emulsions, and blends. The course will also cover topics applicable to complex biological systems. The instructors for the course are Professor Gerald G. Fuller, Professor Jan Vermant, and Dr. Andy Kraynik. The two-day course ($500 SOR members; $600 nonmembers; $300 student SOR members; $375 student nonmembers) runs from 8:30am until approximately 5:00pm on the Saturday and Sunday before the 78th Annual Meeting of The Society of Rheology in Portland, 7-8 October 2006.

The details of the course content are given on the web (www.rheology.org), and a brief list of topics appears below. Short course registration includes a complete set of course notes. Questions about the short course can be directed to Michael J. Solomon, chair of the SOR Education Committee (mjsolo@umich.edu).

Schedule

Saturday Morning **Introduction** (all instructors)

Wetting, surface tension, contact angles, capillary forces, the Young-Laplace equations, Marangoni stresses, molecular structure of surfactants, amphiphilic polymers, proteins, the phase behavior of complex fluid interfaces, experimental techniques.

Saturday Afternoon **Foams** (Kraynik)

Description of foam structure, applications, rheological properties (shear modulus, yield stress, non-Newtonian shear viscosity, slip at the wall, and expansion viscosity), microstructure (cell size and liquid fraction), structure evolution by various mechanisms (foam expansion, diffusive coarsening, and foam drainage), techniques for characterizing foam structure and measuring foam rheology.

Sunday Morning **Emulsions and Blends** (Fuller)

Composition, deformation and orientation of interfaces, morphological processes, such as deformation, different types of break-up and coalescence and their effect on rheology, review of immiscible mixtures with Newtonian components, comparison of microstructure with the predictions of continuum models, discussion of the effects of interfacial agents.

Sunday Afternoon **Interfaces** (Vermant)

Nonlinear response of interfaces to flow, non-Newtonian rheology of interactions and cooperative behavior of molecular amphiphiles and particles residing at the interface, the rheology of important classes of complex fluid interfaces, measurement techniques.

Instructors

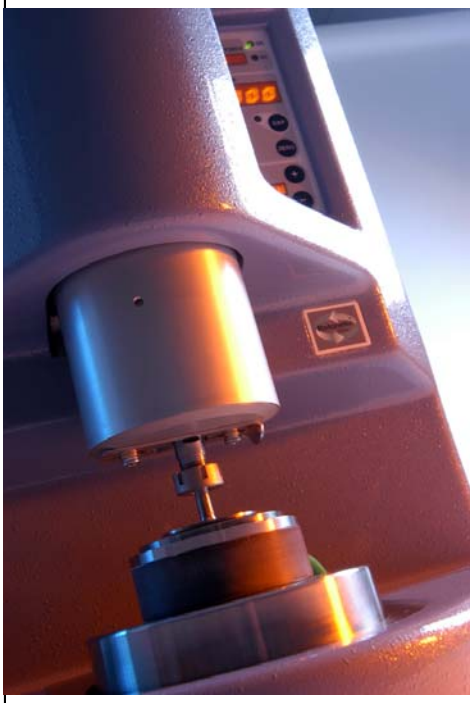
Gerald G. Fuller is Professor of Chemical Engineering at Stanford University, USA. He has co-authored 190 publications including the book *Optical Rheometry* (Oxford, 1995).

Jan Vermant is Professor of Chemical Engineering at the K. U. Leuven in Belgium. His research focuses on bulk and interfacial rheology. He is a recipient of a Dupont Young Faculty Award (2002-2004).

Andy Kraynik is a technical staff member at Sandia National Laboratories in Albuquerque, NM USA. His research is on liquid and solid foams with emphasis on microrheology. He is currently the President of the SOR and received the SOR Distinguished Service Award in 2001.

Photo courtesy of Jan Cilliers, Imperial College, London

Innovations in rheological solutions



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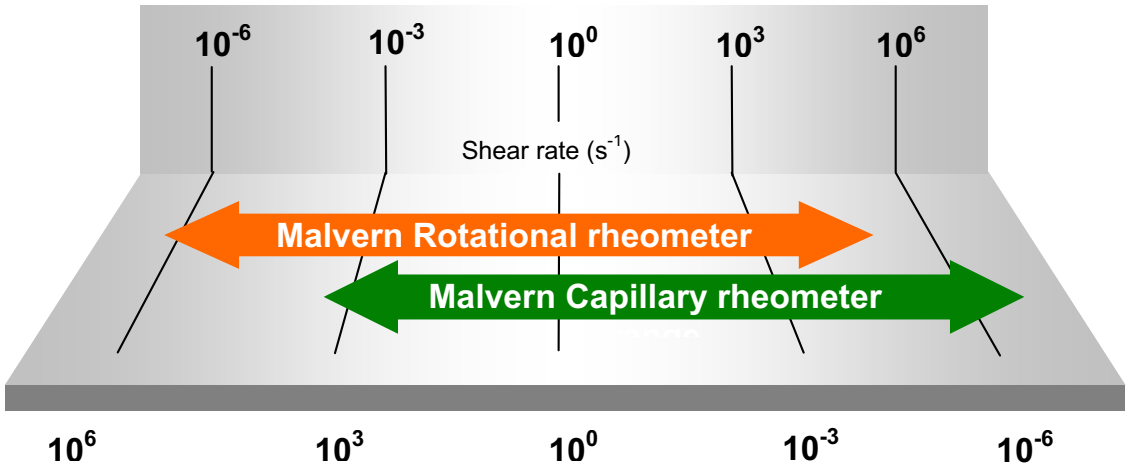

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Beautiful Crete.

3rd Annual European Rheology Conference Hersonisos, Crete, Greece

Dimitris Vlassopoulos and George Georgiou and their organizing committee welcomed 440 participants from 36 countries to Hersonisos, Crete, Greece 27-29 April 2006 for the 3rd Annual European Rheology Conference. Two-hundred twenty-one oral presentations, 173 posters and 9 exhibitors plus the seaside location made for three memorable days of rheology.

AERC2006 was held at the Hotel Creta Maris, on beautiful Hersonisos Bay near Heraklion, with technical sessions taking place all day, Thursday through Saturday. After the sessions concluded, the conference banquet was held at a seaside Greek taverna. Attendees enjoyed traditional Cretan food and drink, and ESR president Manfred Wagner and meeting co-organizer Vlassopoulos gave short presentations. In addition, Roland Keunings shared some amusing after-dinner comments focusing on the events of the Crete meeting and on some of the travel experiences of participants.

For the first time, two short courses were presented as part of the AERC, *Multiscale modeling methodologies* by Kurt Kremer, Manuel Laso, Hans Christian Öttinger, and Doros N. Theodorou (28 participants), and *Interfacial Rheology and Applications*, by Gerry Fuller, Jan Vermant, and Andy Kraynik (25 participants). Both courses were quite successful.

Plenary presentations for the meeting were:
John Brady, "Micro versus Macro Rheology"
Paolo Oliveira, "Progress in Computational Rheology with the Finite Volume Method"
Tom McLeish, "Molecular and Flow-Scale Modeling and Experiments of Controlled-Architecture Polymer Melts"
Fred MacKintosh, "Viscoelasticity of Cytoskeletal Biopolymer Solutions and Networks: Polymer Physics and the Cell"
Ralph Colby, "Polyelectrolyte Solution Rheology"
Jan Dhont, "Shear Banding Transitions of Suspensions of Rods"

One of the plenary lecturers at AERC2006 was Professor Tom McLeish, University of Leeds, UK.

The Saturday banquet was a showcase for Greek hospitality.

In addition to the plenary presentations there were keynote lectures by Ralf Everaers, Seung Jong Lee, Jan Vermant, Francesco Greco, Moshe Gottlieb, and Francois Lequeux.

A first-ever midterm meeting of the International Committee on Rheology, the body responsible for the International Congress on Rheology, took place in Crete (see page 18 of this *Bulletin*). The Hellenic Society of Rheology and the AERC organizers hosted a dinner for the attending ICR and European Society of Rheology (ESR) delegates.

AERC 2007 will take place in Naples, Italy 12-14 April 2007, hosted by Nino Grizzuti and Pier Luca Maffettone and the Italian Society of Rheology.

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TA Instruments is proud to announce another breakthrough in rheometer technology. The new AR-G2 is the first commercial rheometer with patent-pending magnetic thrust bearing technology for ultra-low nano-torque control. With improvements in nearly every rheometer specification, the performance of the AR-G2 stands alone.

AR-G2

ICR Midterm Meeting, Hersonisos, Crete

On the initiative of ICR President Jae Chun Hyun, a midterm meeting of the International Committee on Rheology (ICR) took place on 27 April 2006, in Hersonisos, Crete, in conjunction with AERC 2006. The International Committee on Rheology is the organization of world rheology that sponsors the International Congress on Rheology, which takes place every four years. The next ICR will be 3-8 August 2008 in Monterey, California, USA.

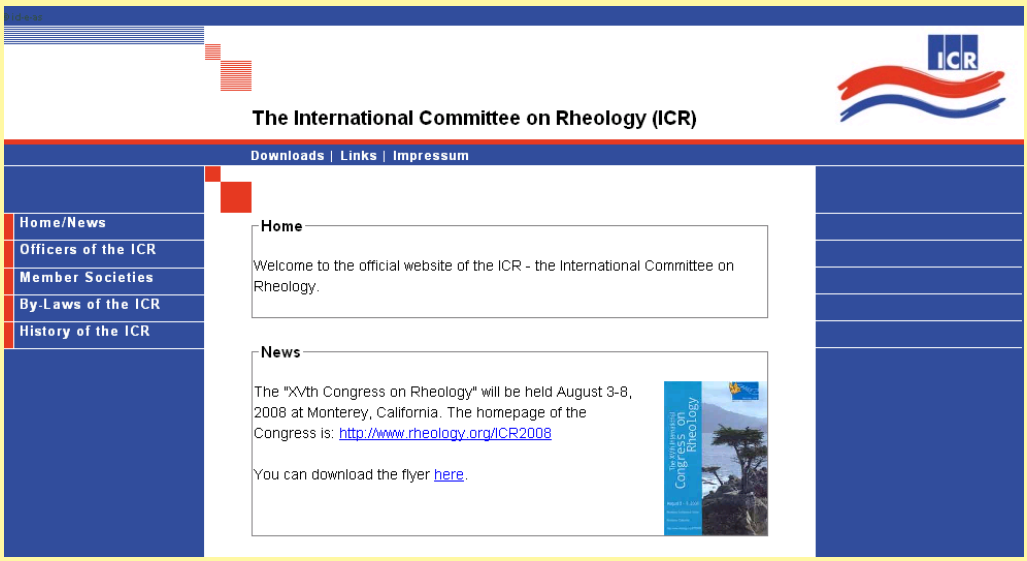
ICR Delegates of 19 Rheology Groups (including delegates from Europe, Canada, China, Japan, Korea, and the US) were present when ICR President Jae Hyun opened the meeting and welcomed delegates to this historic first ever midterm ICR meeting. So far, the ICR has only met on the occasions of the International Conference on Rheology, but it was felt that if rheology is to be placed on the world-wide agenda, a closer cooperation of and more frequent exchanges between ICR delegates may be necessary.

Key strategies in pursuit of this ambitious aim are the creation of an ICR website and an ICR logo. Following the successful ICR2004 held in Seoul, South Korea, the Korean Society of Rheology donated $10,000 USD to the International Committee on Rheology to set up and to cover operational costs of an ICR web site, now up and running at www.icr.tu-berlin.de. According to ICR Secretary Manfred Wagner, the ICR intends to operate its website as an umbrella of the National Society sites. The ICR site will not duplicate information that is available at the national level but rather will provide a platform for fast interlinking of rheological activities worldwide. Suggestions and comments on the new website are welcome and may be forwarded to Wagner at manfred.wagner@tu-berlin.de.

Up until now the ICR itself has no logo and local organizers of International Congresses on Rheology are free to create their own logo. ICR delegates supported unanimously the proposal of ICR Secretary Manfred Wagner to accept a modified version of the 2004 Congress as the ICR logo until further decisions will be taken.

ICR delegates also welcomed the initiative of Paul Slatter to form a Southern African Society of Rheology (SASOR, http://www.sasor.co.za/). SASOR will organize the 1st Southern African Conference on Rheology in Cape Town, South Africa, 24-27 September 2006.

According to the rules of the ICR, ICR2012 will be held in Europe, and the European Society of Rheology has already started preparations of the site selection, which will be formalized at ICR2008.



The new International Committee on Rheology homepage, www.icr.tu-berlin.de.

A Student Perspective on AERC 2006

A delegation of 12 rheologists from South Korea attended AERC 2006, and one of the student attendees, Korea University Ph.D. candidate Dong Myeong Shin, sat down with the Rheology Bulletin to share his impressions of the meeting.

RB: Who attended AERC2006 from Korea?
DMS: There were twelve of us who made the trip from Korea, six professors and six students. I traveled there with Professor Jae Chun Hyun and Professor Hyun Wook Jung from Korea University.

RB: How was the trip?
DMS: It was a long trip. It took about 24 hours to get to Crete, and we arrived late on the Wednesday before the sessions started.

RB: Did you make it to the sessions on Thursday?
DMS: Yes, they started at 8:30 in the morning, and I was there until the end of the day.

RB: That sounds like a full day. Did you get a chance to go out and enjoy the beautiful Greek sunshine?
DMS: No, not until the sessions were over. I was in the conference hotel the entire day. But after the sessions were over our group got together and walked ten minutes to the beach and had dinner at a beach restaurant. It was quite beautiful.

RB: How did you enjoy the restaurant and the Greek food?
DMS: We had gyros, which we liked very much, but there were not so many vegetables as we would have liked. We enjoyed the traditional Greek liquor that they served (Raki). It reminded us of Korean soju. We received a sample of the liquor when we registered for the meeting, and since we enjoyed it, we also had it with our dinner.

RB: Did you miss having kim chi with your dinner?
DMS: Yes.

RB: How did you get involved with rheology?
DMS: After I completed my military service, I returned to Korea University and began to do research with Professor Hyun. I had taken a class in numerical methods from Professor Jung as an undergraduate, and since I liked that subject, I decided to choose that field for my graduate work.

RB: When will you finish your doctorate?
DMS: I hope to finish in February 2009. After that, I would like to do a postdoc in the US and then either become a faculty member or an industrial researcher in Korea.

RB: How does the AERC meeting compare to other rheology meetings you have attended?
DMS: At the AERC meeting there were many student presenters, and that was more comfortable for me. The students explain things at a level that I can understand. At the 2005 SOR meeting in Vancouver that I attended, mostly professors made the presentations, and they spoke at a very high level that was hard to follow sometimes. Also, most professors speak very fast, while students speak more slowly.

RB: Did you see any presentations that were particularly interesting for you?
DMS: Yes, at the poster session I met Professor M. Zatloukal from the Czech Republic. He is doing research that is closely related to what we do in Professor Hyun's group at Korea University. I had read Professor Zatloukal's papers before, so at the poster session I was able to speak with him and to ask him some detailed questions. I was also able to meet Professor Ole Hassager at the meeting.

RB: Will you attend more rheology meetings in the future?
DMS: Yes, I am planning to attend the SOR meeting in Portland in October.

Application for Membership in The Society of Rheology

Any student, scientist or engineer with an interest in the deformation or flow of matter is invited to join The Society of Rheology. Members receive the *Rheology Bulletin*, the *Journal of Rheology* and *Physics Today*. There are no academic or geographic requirements for membership. Complete and send a copy of this application form to the address below.

I wish to apply for membership in The Society of Rheology dating from January _____ (year) **RB**

last name:
first name:
department:
institution:
work address:
city:
state/province:
postal code: (work address appears in the directory)

mail address:
city:
state/province:
postal code: (publications sent to the mail address)

country:
phone:
fax:
e-mail:

affiliation: academia ☐ industry ☐ government ☐ (check most appropriate)

annual dues: regular member ($40) ☐ student member ($25) ☐ (include copy of student ID)

credit card: AMEX ☐ MasterCard ☐ Visa ☐ exp. date:

card number:

signature: _____ date: _____

Please enclose remittance in US dollars drawn on a US bank payable to "The Society of Rheology" and mail to Janis Bennett at AIP, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502, 516-576-2403, 516-576-2223 (fax). A member subscription to the *Journal of Rheology* is only for your personal use. By your signature below, you agree not to loan or give any issues of this journal to a library or other lending institution without written permission from The Society of Rheology.

signature (required):_____ date: _____

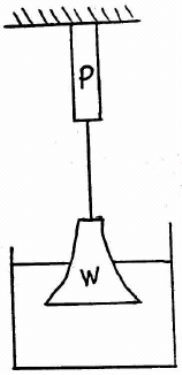
Dear Faith,

I met Art sometime in the early 1970s, when he visited as a consultant to Union Carbide. He drove up from Delaware in his Mercedes, which somehow struck me as quite fitting. Art encouraged my infantile rheology efforts, and generously credited me with the invention of a constant-stress creep experiment, which in fact had been inspired by a Russian publication. (My minor contribution was to design flat weights instead of axisymmetric ones, as described by the Russians.) Art used this "invention" as the basis for one of his rheology exams at UDel and sent me a copy, which I have attached. Art called this type of extensional experiment the "broomstick experiment" because of the resemblance between the shape of the sample and a stick. He was doing quite a bit of this type of thing at the time, as were dozens of other rheologists, but Art was my preferred resource because he explained things in a uniquely understandable fashion. I never had any formal rheology training and probably would have never continued in rheology without the help of visitors such as Art.

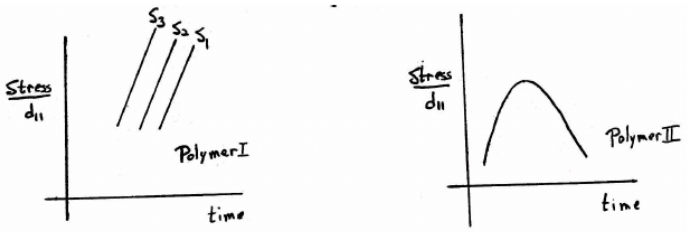
Regards,
Monty

Problem #3

Dr. M. Shaw has invented a device for subjecting a cylindrical rod of molten polymer to extensional deformations at constant stress levels. A weight W is of such a geometry that the polymeric rod P stretches and decreases in cross-sectional area so does the applied force.



He has obtained several sets of data which are reported as an apparent elongational viscosity, Stress/d_{11} , vs. time of deformation. The three curves for polymer I represent data obtained at three different stress levels.



How would you expect the curves of applied stress vs. time to be shaped if the polymer behaves as a Maxwell model characterized by one viscosity and one time constant?

Is a Maxwell fluid capable of responding in the fashion of polymer I where, apparently, the elongational viscosity varies linearly with time for all time?

Note: The contravariant convected Maxwell model may be written, in Cartesian tensor notation, as:

$$s'_{ij} + \theta \left[\frac{\partial}{\partial t} s'_{ij} + v_m \frac{\partial}{\partial x_m} s'_{ij} - s'_{im} \frac{\partial v_j}{\partial x_m} - s'_{mj} \frac{\partial v_i}{\partial x_m} \right] = 2 \mu d_{ij}$$

and

$$s_{ij} = - p \delta_{ij} + s'_{ij}$$

(Metzner, continued from page 7)

Award (1981). He is survived by his wife Elisabeth (Betty) Metzner, who is well known to many rheologists through her attendance and lively company at Society banquets and functions.

Tributes to Art Metzner offered in celebration of his 40th anniversary at the University of Delaware may be found at www.udel.edu/PR/UpDate/93/32/20.html. Memorial contributions in the name of Arthur B. Metzner may be made to The McClellan Scholarship Fund of St. Stephen's Lutheran Church, 1304 N. Rodney Street, Wilmington, DE 19806.

Society Business

NEWS

Student Poster Competition in Portland

The deadline for submitting materials to the SOR Student Poster Competition in Portland is midnight (EST) 8 September 2006. The SOR sponsors a student poster competition to encourage student presentations and participation in SOR meetings and to recognize excellence. In order to be considered in the competition, student poster presenters must also submit a PowerPoint-type poster in PDF format to the chair of the poster session.

A panel of judges will select up to 8 finalists based on the entries, with the final selection of the winner to be made at the poster session. An award of $200 USD will be made to the winner. For more details see www.rheology.org/sor/annual_meeting/2006Oct/poster_competition.htm.

Student Travel Grants for Portland

The Society of Rheology is again offering grants to support partially the cost of attending the Annual Meeting of The Society. These grants are available to any graduate student who is a member of The Society as of 15 July 2006, and whose faculty advisor is also a member as of that date. We anticipate that each grant will cover up to a maximum of four days of lodging at the conference hotel. Only students who have never before received an SOR travel grant are eligible. To apply, the student must write a letter requesting the grant. The student's faculty advisor should add a letter of support, certifying that both the advisor and the student are members of The Society of Rheology. Only one application per faculty advisor will be accepted for each meeting. Letters from the student and advisor should be e-mailed before 15 July 2006 to Timothy Lodge, lodge@chem.umn.edu.

SOR Policy on Special Symposia

Occasionally The Society of Rheology permits symposia to be organized to honor special occasions within the rheological community. The Society recognizes that these types of symposia impose additional constraints on a meeting, since the special presentations compete for space in the Technical Program with presentations submitted in the usual way. Without exception, special symposia must be approved by vote of the SOR Executive Committee at the time that the Technical Program is approved, approximately one year before the annual meeting.

Nominations Invited for the 2007 Bingham Award

The Society's Bingham Medal has been awarded annually since 1948 to an individual who has made an outstanding contribution to the science of rheology or who has performed particularly meritorious service to The Society. Nominations for the Bingham Medalist should be submitted before 15 January 2007 to the chair of the 2007 Bingham Award Committee, who will be appointed in October 2006. Rules and some selected guidelines governing the Bingham Award are available on the web at www.rheology.org/sor/awards/bingham/nom2007.htm.

Officer Nominating Committee to be Formed

The SOR will hold officer elections in 2007, and the Nominating Committee for those elections will be formed in Spring 2007. The SOR constitution provides for a three-member nominating committee to report its recommendations at least 145 days prior to the Annual Meeting, approximately 17 May 2007. Members interested in serving on the Nominating Committee should indicate their interest to a member of the SOR Executive Committee. International and industrial members are particularly encouraged to serve.

Minutes of the ExCom Meeting

Sunday 14 May 2006
Chicago, Illinois USA

Andy Kraynik called the meeting to order at 8:28 am in the Tri-State Room of the Four Points Hotel near Chicago O'Hare Airport in Schiller Park, Illinois. One minute of silence was observed for the late Arthur Metzner.

Attending committee members were Susan Muller, John Brady, Lynn Walker, Monty Shaw, Jeffrey Giacomin, Bob Prud'homme, Dan Klingenberg and Timothy Lodge. Invited guests were Jaye Magda (Chair, Local Arrangements, Salt Lake City Meeting), Mike Solomon (Chair, Education Committee) and Pat Mather (Chair, Membership Committee). The minutes of the previous meeting were read and approved.

Monty Shaw presented the Statement of Revenues and Expenses for The Society of Rheology and for its *Journal of Rheology*. Production costs for the *Journal* are down, though we did incur a one-time expense for archiving the original six volumes (a project called *Jurassic JOR*). Thanks to a Canadian federal tax refund, the Vancouver meeting now appears to be breaking even. The financial position of the Society is sound. The Executive Committee passed a motion to accept these reports.

John Brady, Editor, reported that the *Journal of Rheology* is healthy. Sixty-nine articles have been submitted in calendar year 2006. Since last August, some 23 papers were accepted, 44 rejected, and there are now 40 pending. Under Brady's editorship, the median time from receipt to first decision is 50 days. Our new electronic integrated editorial and peer review system (instituted in July 2005) is working well. Reporting as Chair of the *Journal of Rheology* Publication Award committee, Brady announced the 2006 winner: "Constriction flows of monodisperse linear entangled polymers: Multiscale modeling and flow visualization," by Collis, Lele, Mackley, Graham, Groves, Likhtman, Nicholson, Harlen, McLeish, Hutchings, Fernyhough and Young, *J. Rheology*, **49**(2) 501-522 March/April (2005).

Giacomin, Editor for Business, reported on the *Journal of Rheology On-Line (JOROL)* which now receives over 15,000 requests per month from over 1,600 unique hosts, downloading articles roughly 2,000 times. Of the roughly 2,500 *JOR* articles on-line, about 1,000 different articles are downloaded each month. Each month, articles from every single archived volume are downloaded. The Executive Committee passed a motion to email membership an annual listing of the top ten *JOR* articles downloaded by unique users.

Giacomin led a discussion on individual electronic access to the *Journal*. A motion was passed to extend free electronic access to retired members. A motion was also passed to extend electronic access to individual members of The Society for $40 per year starting in 2007.

Pat Mather, Chair of the Membership Committee, reports that as of 30 April 2006, we had 1463 members (1223 regular, 169 student, 41 retired, 12 of record and 18 Society of Physics Students (undergraduates)). This is down from 1598 at the end of 2005.

Chair of the Education Committee Mike Solomon led a discussion about future short courses. On 7 and 8 October 2006 (Saturday and Sunday), the weekend preceding the upcoming Portland meeting, the two-day short course "Rheology of High-Interface Systems" will be taught by Gerry Fuller, Jan Vermant and Andy Kraynik. Mather suggested that we make the courses available electronically, either by live broadcast or for later download or both. The committee is considering two short courses for the Salt Lake City meeting: "Beginning Rheology" (Morrison and Giacomin), and one of the following: "Computer Simulation and Modeling," "Rheology and Electrokinetics of Biological Models and Fluids," "Polymer Processing for Micro and Nanofluidic Devices," "Food Rheology," and "Surfactant Rheology." Solomon is actively soliciting proposals on these or other subjects.

Past President Susan Muller led a discussion on restricting use of The Society email list, which is now subject to approval by the Past President. Muller then led a discussion about the Bingham Award Committee selection process.

Pat Mather proposed to host the 2011 SOR meeting (9-13 October) at the Intercontinental Hotel and Conference Center in Cleveland, Ohio. At 1:30 pm Andy Kraynik moved the meeting into a brief Executive session. A motion was passed to accept Mather's proposal. Kraynik then moved the meeting back to open session.

Vice President Bob Prud'homme led a discussion on Meetings Policy. Ideas were exchanged on how to increase poster session prominence. A separate discussion ensued on making the meeting programs more relevant to industrial rheologists.

Jaye Magda (Local Arrangements Chair) reported on the 7-11 October 2007 meeting in Salt Lake City, Utah. Everything is falling nicely into place for the Salt Lake meeting.

On behalf of Albert Co (Webmaster and Chair, Local Arrangements), Andy Kraynik reported on the Portland meeting. There were 248 papers submitted for oral presentation for this meeting. A motion was passed to commemorate Art Metzner at the Monday luncheon of the Portland meeting.

On behalf of Gerry Fuller and Bob Powell (Co-Chairs, Local Arrangements), Andy Kraynik reported on plans for the 2008 International Congress on Rheology in Monterey, CA USA. Timothy Lodge announced that the student member travel grants program will be implemented for this ICR. Also, an open wireless area will be arranged near the conference sessions.

Andy Kraynik (Chair, Local Arrangements) reported on the 2010 Santa Fe meeting preparations. Everything is moving along just fine.

Susan Muller led a discussion about the *Rheology Bulletin*. A motion passed to create a discretionary fund of $1,000 for the *Rheology Bulletin* Editor.

President Kraynik appointed Jeffrey Giacomin as an interim successor to Art Metzner to attend the AIP Executive Committee meeting on 1 June 2006 in Melville, NY.

The meeting was adjourned at 4:11 pm.

Treasurer's Report

To the membership,

Attached are tables showing the financial situation for The Society of Rheology at the end of calendar year 2005, along with a proposed budget for 2007. The latter will be presented formally to the Membership at our Annual Meeting in Portland. As can be seen by examining the Balance Sheet, The Society's financial position continues to improve. The Executive Committee prudently voted to increase our reserves in the Annual Meeting category in view of the upcoming International Congress on Rheology, for which we are financially responsible. In spite of this increase, the unrestricted assets at the end of 2005 were only slightly lower than for year-end 2004. For the *Journal of Rheology*, highlights on the income side include the proceeds from the licensing of library consortia and ad income. On the expense side, Production costs have fallen again as AIP passes on

Treasurer's Report

savings from electronic processing of manuscripts. For The Society in general, we have seen marked increases in *Bulletin* advertising revenue, and interest income. The Vancouver meeting receipts and disbursements are still continuing; the only items appearing for 2005 are some Short Course expenses, leading to a loss for 2005, and a small difference between the income from our merchant account and transfers to the meeting account. We expect to have a full accounting ready for the Annual Meeting in October.

Respectfully submitted,

Treasurer's

The Society of Rheology
Receipts and Disbursements

(all amounts, USD)	2007 Budget	2006 Budget	2005 Year End	2005 Budget	2004 Year End
RECEIPTS					
Dues	55,000	55,000	56,780	55,000	54,885
Interest	37,000	35,000	29,823	10,000	10,958
Journal of Rheology	268,100	259,500	270,107	256,000	253,126
Mailing List Sales	1,000	1,000	0	1,000	0
Bulletin Advertising	10,000	7,000	17,820	3,000	3,504
Annual Meeting (net)	0	0	7,709	0	36,586
Short Course (net)	0	0	-2,225	0	8,915
TOTAL RECEIPTS	371,100	357,500	380,014	325,000	367,974
DISBURSEMENTS					
AIP Dues Bill & Collect.	11,000	12,000	10,503	12,000	12,715
AIP Adm. Services	9,500	9,500	9,511	9,500	9,553
AIP Mem. Soc. Dues	7,700	7,600	7,706	7,600	8,343
Contributions and Prizes	1,900	1,900	2,033	1,900	1,700
Journal of Rheology	212,933	191,420	218,437	234,349	232,262
Bulletin	9,000	9,000	8,745	7,000	6,930
Bingham Award	7,000	7,000	10,000	14,000	0
Executive Cmt. Meetings	8,000	13,000	6,326	13,000	7,486
Pres. Discretionary Fund	1,500	1,500	0	1,500	0
Treas. Discr. Fund	1,500	1,500	556	1,500	286
Progr. Chm. Discr. Fund	3,000	3,000	2,637	4,000	0
Webmaster Discr. Fund	3,000	3,000	503	3,000	0
Office Expenses	4,000	4,000	2,880	3,000	3,755
Banking Services	720	300	39	100	333
Liability Insurance	7,500	7,500	4,349	7,500	3,330
Membership Broch. & Appl.	500	500	0	1,500	422
Accountant	2,200	2,200	1,925	2,200	1,910
Student member travel	12,000	12,000	3,566	24,000	13,100
Annual meetings, future	9,000	7,000	2,108	7,000	7,532
Website	1,000	1,000	637	1,000	3,936
Miscellaneous	500	1,000	0	1,000	0
TOTAL DISBURSEMENTS	313,453	295,920	292,459	356,649	313,594
Net	57,647	61,580	87,555	-31,649	54,380

Journal of Rheology

(All amounts: USD)	2007 Budget	2006 Budget	2005 Year End	2005 Budget	2004 Year End
RECEIPTS					
Subscriptions	182,600	181,500	180,061	187,000	184,797
Reprint Sales	13,500	7,000	13,791	7,000	9,606
Ad Sales	35,000	35,000	35,107	33,000	32,177
JORO revenue	36,000	35,000	37,610	27,000	25,447
Miscellaneous	1,000	1,000	3,538	2,000	1,100
TOTAL RECEIPTS	268,100	259,500	270,107	256,000	253,126
DISBURSEMENTS					
Ads	9,500	9,000	9,454	9,000	7,991
Reprints, Single Copy	5,400	5,400	5,363	5,400	5,025
Paper, Printing	28,345	24,500	32,656	30,529	31,547
SOR Editorial	42,000	42,000	39,855	49,000	49,217
Production	55,000	43,500	54,985	52,500	63,552
Fulfillment	6,625	7,600	6,560	7,600	6,676
Distribution	18,063	17,020	19,094	16,920	17,123
Electronic publishing	42,000	35,000	42,239	48,000	42,489
Miscellaneous	6,000	7,400	8,231	15,400	8,642
TOTAL DISBURSEMENTS	212,933	191,420	218,437	234,349	232,262
Net	55,167	68,080	51,670	21,651	20,864

The Society of Rheology, Inc.
Balance Sheet

(all amounts, USD)	2005 Year End	2004 Year End	2003 Year End	2002 Year End	2001 Year End
Assets					
Cash in checking account	12,721	29,012	2,047	466	9,374
Securities	0	0	0	0	0
Balance in AIP account	1,056,188	976,655	938,047	915,334	843,151
Total Assets	1,068,909	1,005,667	940,094	915,800	852,525
Liabilities and Net Assets					
Liabilities					
Deferred revenue	132,396	155,969	143,603	162,363	137,468
Total Liabilities	132,396	155,969	143,603	162,363	137,468
Net Assets					
Publication reserve	450,000	450,000	450,000	450,000	450,000
Student travel grant reserve	10,000	10,000	10,000	10,000	10,000
Annual Meeting reserve	200,000	100,000	100,000	70,000	70,000
Operating reserve	100,000	100,000	70,000	70,000	70,000
Unrestricted	176,513	189,698	166,491	153,437	115,057
Total Net Assets	936,513	849,698	796,491	753,437	715,057
Total liabilities and net assets	1,068,909	1,005,667	940,094	915,800	852,525

the end

(Meetings, continued from back cover)

13th International Congress of Biorheology, location TBA (held every three years, www.coe.ou.edu/isb).

2009

February 2009
5th International Symposium on Food Rheology and Structure - ISFRS 2009, Zurich Switzerland (every 3 years; www.isfrs.ethz.ch)

Spring 2009
5th Annual European Rheology Conference AERC 2009, location TBA

Summer 2009
5th Pacific Rim Conference on Rheology, location tentatively Hokkaido, Japan, Hiroshi Watanabe (every 4 years)

17-18 October 2009
SOR Short Course on Rheology (topic TBA), Madison, WI USA

18-22 October 2009
81st Annual Meeting of The Society of Rheology, Madison, WI USA, Jeff Giacomin

2010

Spring 2010
6th Annual European Rheology Conference AERC 2010, location TBA

23-24 October 2010
SOR Short Course on Rheology (topic TBA), Santa Fe, NM USA

24-28 October 2010
82nd Annual Meeting of The Society of Rheology, Santa Fe, New Mexico USA, Andy Kraynik

2011

Spring 2011
7th Annual European Rheology Conference AERC 2011, location TBA

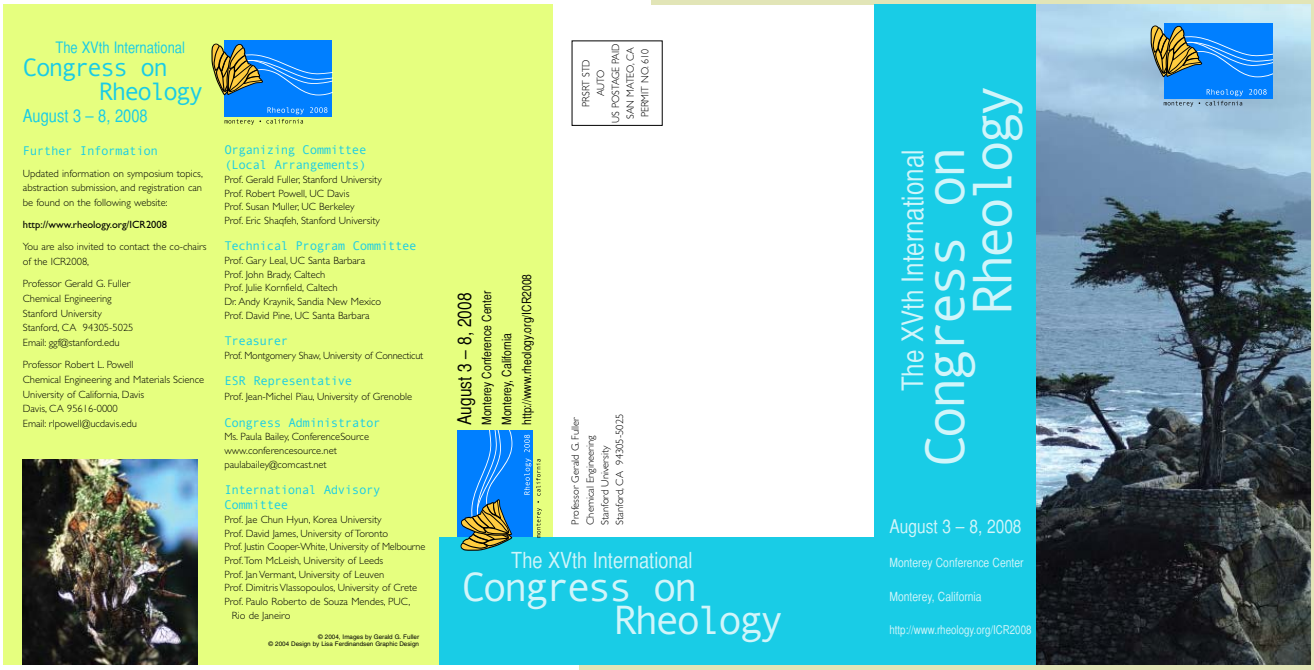
8-9 October 2011
SOR Short Course on Rheology (topic TBA), Cleveland, Ohio USA

9-13 October 2011
83rd Annual Meeting of The Society of Rheology, Cleveland, Ohio USA, Pat Mather

2012

Summer 2012

See also:
www.rheology.org/sor/info/Other_Meetings.htm
www.rheology-esr.org/Meetings.php
www.appliedrheology.org/ (click on conferences)



CALENDAR OF RHEOLOGY CONFERENCES AND COURSES

2006

5-8 July 2006
International Workshop on Mesoscale and Multiscale Description of Complex Fluids, Prato, Italy, Ravi Jagadeeshan and Eric Shaqfeh (users.monash.edu.au/~rprakash/Workshop/prato.htm)

12-14 July 2006
III Brazilian Conference on Rheology, Rio de Janeiro, Brazil, Mônica F. Naccache and José Karam Filho (http://www.reologiabrazil.lncc.br)

17-21 July 2006
Symposium on Flows in Manufacturing Processes, ASME Joint U.S.-European Fluids Engineering Conference, Miami, FL USA (www.asmeconferences.org/FEDSM06)

19-22 September 2006
IUTAM Symposium on Flow Control with MEMS, London, UK, J.F. (Jonathan) Morrison

24-27 September 2006
1st Southern African Conference on Rheology, Cape Town, South Africa, Paul Slatter (www.sasor.co.za)

7-8 October 2006
SOR Short Course on *Rheology of High-Interface Systems,* by Gerry Fuller, Andy Kraynik, and Jan Vermant, Portland, ME USA

8-12 October 2006
78th Annual Meeting of The Society of Rheology, Portland, Maine USA, Albert Co and Doug Bousfield

2007

12-14 April 2007
4th Annual European Rheology Conference AERC 2007, Naples Italy, Nino Grizzuti and Pier Luca Maffettone

June 2007
Short Course on *Rheological Measurements*, directed by Chris Macosko, University of Minnesota, Minneapolis, MN USA (www.cems.umn.edu/rheology)

11-14 June 2007
IUTAM Symposium on Recent Advances in Multiphase Flows: Numerical and Experimental, Istanbul, Turkey, Andreas Acrivos and Can Delale

June 25-28, 2007
2nd International Conference on Advances in Petrochemicals and Polymers (ICAPP 2007), The Imperial Queen's Park Hotel, Bangkok, Thailand; The Petroleum and Petrochemical College, Chulalongkorn University, Thailand (www.ppc.chula.ac.th/icapp2007.html)

June 2007
Short Course on *Practical Rheology*, by Hemi Nae, Hydan Technologies, Inc., Hillsborough, NJ USA

6-8 September 2007
IUTAM Symposium on Advances in Micro- and Nanofluidics, Dresden, Germany, N.A. (Nikolaus) Adams

6-7 October 2007
SOR Short Course on Rheology (topic TBA), Salt Lake City, UT USA

7-11 October 2007
79th Annual Meeting of The Society of Rheology, Salt Lake City, UT USA, Jaye Magda

2008

2-3 August 2008
SOR Short Course on Rheology (topic TBA), Monterey, CA USA

3-8 August 2008
XVth International Congress on Rheology and 80th Annual Meeting of The Society of Rheology, Monterey, CA USA, Gerry Fuller and Bob Powell

Summer 2008

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