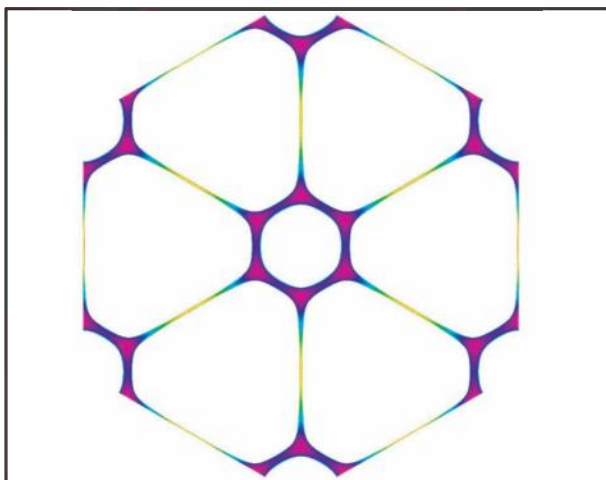

THE BRITISH SOCIETY OF RHEOLOGY

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Rheology

Bulletin

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THE BRITISH SOCIETY OF RHEOLOGY

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THE BRITISH SOCIETY OF RHEOLOGY



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Dr Oliver G Harlen, Dept of Applied Mathematics,
University of Leeds, LEEDS LS2 9JT

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EDITORIAL

This is my last Bulletin as Editor. Sadly I haven't been able to complete the normal stint of four years service due to my wife's ill health, which is the reason why this issue is rather late. However, I am pleased to be able to report that Bogdan Dobraszczyk has agreed to step into the Bulletin Editor's shoes. I hope he will enjoy the challenge as I have.

I would like to thank everyone who has contributed to the Bulletin during my tenure. Please continue to send articles, letters and conference reports etc. They are what make the Bulletin an interesting read. A special thank you goes to Nick Hudson, the Publications Manager. Nick has been an enormous help to me and handles all the printing and distribution of the Bulletin and also loads it onto the website.

In this Bulletin Mike Webster and Jon Harvey give an account of the website development. This has been a major project for the Society that will bring benefits for many years to come. There is also a book review and a letter from Anthony Pearson that will hopefully spark some debate, as well a report of the Christmas meeting and AGM.

Oliver Harlen

SUBMISSIONS TO THE BULLETIN

We are always looking for articles and letters for inclusion in the Bulletin, preferably on a rheological topic. We also welcome conference announcements and any news items of likely to be of interest to BSR members. Electronic copy is much preferred as it saves retyping, most packages supported (Word, TeX, LaTeX, ASCII, RTF) but always provide a contact name, address, eMail, or telephone number in case of queries.

The copy date for the next Bulletin is 15th June, but late copy can sometimes be accommodated. The facilities of the BSR web sites may also be appropriate. Please contact the Editor for details.

COVER ILLUSTRATION

The cover illustration shows the expansion of bubbles of two different sizes in an Oldroyd B fluid within a hexagonal array. The highest values of the polymer stress occur in the thin windows between the largest bubbles. Picture courtesy of Mrs Sally Everitt, Department of Applied Mathematics, University of Leeds.

We are always on the look out for colour or black & white pictures (preferably of a rheological nature!) for the front cover of the Bulletin and Rheology Abstracts. Please contact the Bogdan Dobraszczyk (Bulletin Editor), Gary Tucker (Abstracts Editor) or Nick Hudson (Publications Manager). Suggestions are always welcome!

BSR NEWS

The Vernon Harrison Annual Doctoral Prize

Last year it was reported that one of the Society's founders, Dr Vernon Harrison, had died. He left a bequest of £2000 to the Society and with this we have decided to initiate a new Society award. To encourage and support young rheologists, we have launched the Vernon Harrison Annual Doctoral Prize for the most outstanding PhD thesis in rheology in each academic year. This aims to recognise excellence, creativity and novelty in research and will be awarded annually to the postgraduate member who, in the opinion of the adjudicating committee, has made the most original and significant contribution to any branch of rheological research (experimental, computational or theoretical) leading to the award of a PhD degree. We are very grateful to Dr Harrison for providing some funds and impetus for this initiative and in December the first award was made.

The award for 2002-3 was adjudicated by a committee appointed by Council, based on proposals and recommendations from the candidates' supervisors, reports from external examiners and, of course, on the PhD thesis itself. The first winner of the Vernon Harrison award is Dr Richard S. Graham, for his research on 'Molecular Modelling of Entangled Polymer Fluids under Flow' carried out at the University of Leeds with Professor Tom McLeish in the Department of Physics and the Interdisciplinary Research Centre for Polymer Science and Technology and Dr Oliver Harlen in the Department of Applied Mathematics. Dr Graham is currently a postdoctoral fellow in the Department of Chemical Engineering, University of Michigan, USA. The adjudicating committee

were impressed by the scope and depth of Dr Graham's research into extending the applicability of molecularly-based constitutive models, especially to strong flows. He was presented with his prize - a cheque for £500 and an illuminated certificate – by the President, Professor Geoff Maitland, at the Society's Winter Meeting in Cambridge on 16th December.

Dr Richard Graham
receiving the Vernon
Harrison Prize from
BSR President Professor
Geoff Maitland.



The committee also highly commended the thesis of Dr Mohammad S. Al Hodaly of the Institute of Mathematical and Physical Sciences, University of Wales, Aberystwyth. His thesis on 'Partial Differential Equations in Complex Fluids' was carried out with Professor Russell Davies and he was awarded a runners-up prize of £100.

Any person who has submitted and successfully defended a thesis in any area of rheology at a higher education institution in the United Kingdom between 1st September 2003 and 31st August 2004 is eligible for the 2003-4 award. Research supervisors are encouraged to consider entering their best students for this award. Details of the nomination requirements will be published in the next issue of the Bulletin.

Professor Geoff Maitland

Commentary on BSR Winter Meeting 2003

Current Issues in Experimental and Theoretical Rheology

The meeting was held in the Cambridge University Chemical Engineering Department and began with a laboratory tour to see the famous multipass rheometer and the ever-popular demonstration of the cold extrusion of chocolate.

The opening presentation was the Christmas lecture given by Professor Tom McLeish, who gave a highly entertaining talk on "stringy rheology". He gave a cautionary tale of the dangers of having a theory that agrees with experiments, and finished by presenting two diverse applications of stringy rheology, the folding of proteins and modelling the effect of the flow properties in the convection zone of the sun.

The next two papers were a return to the traditional topic of rheological measurements. Gerry Meeten discussed the results of using his squeeze film rheometer (the construction of which is described in Bulletin volume 45(2)) to measure common household products such as hair-



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cream and mayonnaise. In the following paper Ying-Yang Hou gave an overview of new rheometry techniques.

In the final two talks of the day, Sally Everitt discussed how viscoelasticity effects the growth of gas bubbles in polymeric liquids and Valerie Anderson described the complex rheology of micellar solutions used in oil recovery.

On the following morning Tri Tuladhar continued the theme of bubble growth in polymer foams with a description of his experimental studies of the expansion of pentane bubbles in polystyrene. This was followed by two talks on numerical modelling of polymer flows. First, Tim Phillips discussed the use of spectral elements in flow computations and then Mike Webster discussed the computation of weakly compressible polymeric fluids.

The last session was devoted to the inaugural award of the Vernon Harrison Doctoral Prize. Before the announcement of the result, there were presentations describing the work of the two finalists. Richard Graham described his molecular theory of entangled linear polymers, in which he had incorporated recent ideas on the molecular dynamics in a self-consistent theory. Russell Davies then described the work of Mohammed Al Hodaly on transient decay rates in some common constitutive models, in which he had resolved long-standing issues found in previous studies of these problems.

Following these talks, Geoff Maitland announced the adjudicating committees decision and presented the award to Richard Graham. Mohammed Al Hodaly was awarded the runner-up prize, and in his absence, this was received by his supervisor, Russell Davies.

Oliver Harlen

Commentary on the AGM 2003

The AGM of the BSR took place immediately after the final session of the first day of the winter meeting.

In his presidential address Geoff Maitland outlined the developments made during the year. Major progress had been made in sorting out membership lists and unpaid subscriptions. Membership services had been improved through the new website developed by Jon Harvey and regular monthly emails. Vernon Harrison, one of the founding members of the BSR, had left a legacy to the society. The Council had decided to use this bequest to establish an annual prize for the best Ph.D. thesis on a rheological topic. Finally Geoff thanked the three members leaving council, Phil Banfill, Oliver Harlen and Geoff Brownsey for their contributions. Geoff Brownsey who resigned from Council earlier in the year due to ill health will be awarded the society distinguished service award in recognition of his longstanding service to the BSR.

The Secretary, Tim Phillips, said he had nothing to add to the President's statement other than to pass on a request for illustrations for the front cover of the Bulletin and Abstracts.

In his Treasurer's report, Rhodri Williams gave a detailed overview of the society's accounts. The financial year-end had been changed to coincide with the membership year. He reported that there had been considerable recent extra expenditure on the web site development and the production of rheology reviews. He expressed confidence in the future health of the society's accounts. His main concern was the relatively poor sales so far of Rheology Reviews and urged all members to support this venture.

Mike Webster, who took over the role of Membership Secretary from Geoff Brownsey, reported that the society now had 448 members including 30 new members. Around 70 members who had not paid their subscriptions for the last years were deemed to have resigned.

Oliver Harlen announced that he was standing down a Bulletin Editor due to his wife's ill-health. In his report he thanked the publications manager, Nick Hudson, for his considerable help with the production of the Bulletin. He pointed out that Nick does a considerable amount of unseen work in organising the printing and distribution of both the Bulletin and Rheology Abstracts. Unfortunately the Abstracts Editor, Gary Tucker was not able to attend the meeting and so was not able to give a report.

Following the officers' reports, two votes were taken on moving the AGM to spring and extending the term of office of Council members for next year. The first was passed with an overwhelming majority and the second unopposed. The Council members for next year were then elected unopposed with the position of Bulletin Editor being vacant. After the meeting we returned to Corpus Christi College for the conference dinner.

Oliver Harlen

MEMBERSHIP NEWS

We would like to welcome the following new members to the British Society of Rheology:

Mr Kevin Barber
Dr M. Saleem Chandio
Mr Ngow Gwoliang
Prof Octavio Manero
Dr Peter James Martin
Miss Letizia Mortara
Mrs Muda Noraziah
Dr Ramyata Paruchuri
Mr B. Puangkird
Dr Leela Sequeira
Prof Martti Toivakka
Dr Lee Jung Yong

BSR Website Development Report: January 2004

Development work on the *new-look* website for the BSR has progressed some way over the past year. This article is intended to shed some light on the significant changes and new features offered through this endeavour, presenting the significant advances and benefits to Society members.



WWW-site Design

The *vision* behind the development of this new site was to uplift the present workings of the Society and its Council, beyond a simple window-browsing and information providing facility, to a powerful interactive dynamic engine (with database facilities and intelligent automated control) of true worth to the Society as a whole, particularly as

we enter the new age of IT and the internet. We have tried to maintain consistency with the previous BSR website, in that the information and text from the earlier site has provided the foundation for the new site. The BSR Council have been instrumental in design choices and consulted throughout the development process. Many section titles from the old site have been transposed to the new, to accommodate user-familiarity. In addition, the site shall shortly undergo a visual overhaul, which will act to further enhance the usability/look-and-feel of the site (see images above).

News and Announcements

News and announcements take precedence, being made available from the homepage, with a separate News Archive available on request, containing expired items. The facility is based on a “calendar” system, whereby items only appear for a designated time, beyond which they are automatically transferred to the archive section. An example on the announcement list concerning Conference awareness is provided below.

Announcements:

[News Archive...](#)

• AGM & BSR Winter Meeting 2003 15-16 Dec 03

This meeting, at the Department of Chemical Engineering, University of Cambridge, shall bring together rheologists, especially young researchers, to discuss their current research in General Rheology in an informal atmosphere. Particular emphasis is on current work, that may lead to collaboration between experimentalists, theorists and modelers. The BSR AGM will be held during the conference.

The announcements list

Typically, announcements targeted at the site are dealt with by the BSR Secretary (Prof. T. N. Phillips, tnp@aber.ac.uk). A second announcement example would be the “Incentives to New Members”, where details are provided on incentives to both existing BSR Members and fresh Student Members. If any reader wishes to contribute here, please direct any items of news (electronic/paper) or other material, accordingly. This issue also arises under proliferation of other data, such as the supply by members of static images (photographs), videos or other formats, which currently may be stored in an “*on-line gallery*” of case-studies. We are actively seeking **Membership contribution** here, so that we envisage the dynamic growth of this facility with the passage of time (see image below).

Advertising/endorsements/links provision, are all envisaged to play a larger part of the sites functional operation in the future. In this regard,

our [www-Officer](#) (Prof. Chris Petrie) would be pleased to receive suggestions and concrete proposals to act upon.

People

- Council Members
- Past BSR President
- Past BSR President
- Past Council Member

[Back to Gallery entrance](#) [Back to Categories](#)

You are viewing the "Normal" (high-graphics) version of this site. Click [here](#) to change.

Current Category: Past BSR Presidents (Group Photo)

Rheology Abstracts

- Abstracts Volume 43
- Abstracts Volume 42

1. Past BSR Presidents: Walters, Hutton and Barnes:



2. Past Presidents of the BSR:



The BSR Online Gallery

Membership Information

There is now an extensive membership subsystem integrated within the BSR site. This allows greater efficiency and control bestowed on the Council, with facilities for tracking membership payments¹ and contact addresses, amongst other things. This underlying system benefits not only the Council, but also the membership as a whole. Below, we highlight just a sample of such benefits provided.

Membership Document & Search Facility

The details of BSR members are now stored in a database on the website server. Due to the nature of a database, the information retained may be searched, ordered and presented in various alternative forms, suitable to specific requirements. Hence, and exclusively to BSR members, this feature has led to the *on-line* provision of a database-generated "Membership Booklet" and "Membership Search facility".

Until recently, "Membership List" booklets had been produced for the BSR, in which the names of all BSR members are printed, along with contact addresses, election dates and interest categories. This document

¹ Please note, although records of all payments are stored in the site-database, no bank or credit-card details are electronically held.

has now been replicated electronically on the site, available to all BSR members in the form of a Microsoft Word document (Rich-Text Format [2]). It is generated immediately and dynamically, upon request from the database, and is therefore ensured to be always up-to-date with the most current state of the records held.

Search Keyword:

Members of the BSR matching your query:

1. **Dr. Helen**
E-mail: helen.helen@bsr.com
Business Address: [Hemel Hempstead, Hertfordshire, UK](#)
Tel: [01438 752448](tel:01438 752448) Fax: :
2. **Dr. Steve**
E-mail: None
Business Address: [Hemel Hempstead, Hertfordshire, UK](#)
Tel: [01438 752448](tel:01438 752448) Fax: [01438 752448](tel:01438 752448)
3. **Dr. A.C. Smith**
E-mail: smith.ac@bsr.com

The membership search facility

Members can now use an on-line “*Membership Search-facility*”, the functionality of which is to complement the “*Membership List*” document. Currently, searches may be conducted on *names* and *addresses*, although the power of the search may be extended in the future.

Membership payment information

To meet professional requirements and fulfil the functions of the Society fully, the BSR has recently undertaken a concerted membership drive, appealing to our members to regularise their fees payment position. Having payment data readily accessible, has meant that it is not only easier to detect shortfalls in receipts of payment-dues, but also permits one to gauge the effectiveness of the various services offered, such as appealing to an Online Credit Card Payment facility (see section 5, below).

Each member of the BSR has a payment profile, detailing chosen methods and payments made over the years. This data is secure, transparent and personal. It may be viewed by an individual member, via their own profile online, once they log into the site with their unique,

private username/password. This on-line profile provides records as far back as 2001 (or from when you first became a member of the BSR). The table will also inform you if/where there are discrepancies in payments and prompts with payment means: either by postal **mail** (cash, cheque or credit-card), or **online** (credit-card).

A typical example of such an on-line Profile Payment table is illustrated below:

Details of membership payment since 2002:						
Year	Cheque (£)	Credit Card (£)	Standing Order (£)	Other (£)	Total (£)	Rheology Rev. (£)
2002	15	0	0	0	15	-
2003	0	25	0	0	25	0
2004	0	0	0	0	0	0

Full Membership fee 2001, 2002 of £15 (-RAs) or £30 (+RAs)
Full Membership fee 2003+ of £25

Example membership payment table

In the interests of correctness, we have consigned considerable time and effort in compiling, updating and streamlining the records held. Nevertheless, some data has been more elusive to trace. In this regard, if through your own observation as a reader/viewer, you discover any inaccuracies in this data, please do not hesitate to contact the Treasurer/Membership-Secretary, so that the situation may be rectified.

Publications

BSR Bulletins and Rheology Abstracts online

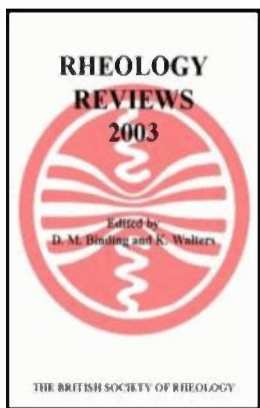
One of the *key* targets when developing the new site was to render BSR publications, *Bulletins* and *Rheology Abstracts*, available electronically to the membership as a whole. Currently, **Institutions** and/or **non-BSR Members** may subscribe and gain access to this service provision, as indicated via the site. Presently each period, the current issue (*PDF* format) is uploaded by the Publications Manager (Dr Nick Hudson) to the site. Past issues are available also.

- + Volume 43
- + Volume 44
- + Volume 45
 - Issue 1 - Bulletin 45 1.pdf (2913Kb)
 - Issue 2 - Bulletin 45 2.pdf (471Kb)
 - Issue 3 - Bulletin 45 3.pdf (918Kb)
- + Volume 46

Viewing BSR Bulletins online

To view a publication, one would log-into the site with a username/password, go to the Abstracts/Bulletins page and select first the Volume number, and then the issue required. This will then automatically open that particular issue in Adobe Acrobat Reader [3]. (Please bear in mind that some documents may be quite large, and can take some time to download over dial-up internet connections. For guidance, the size of the file is indicated in parentheses after the Issue-name.

BSR Rheology Reviews 2003



Payment Summary Table:

Item	Amount
Rheology Reviews @ £20 (x1): <i>(Special Offer to members)</i>	£20.00
Rheology Reviews @ £25 (x3):	£75.00
Delivery Costs (4 x £2):	£8.00
Total:	£103.00

Your Name:

Delivery Address:

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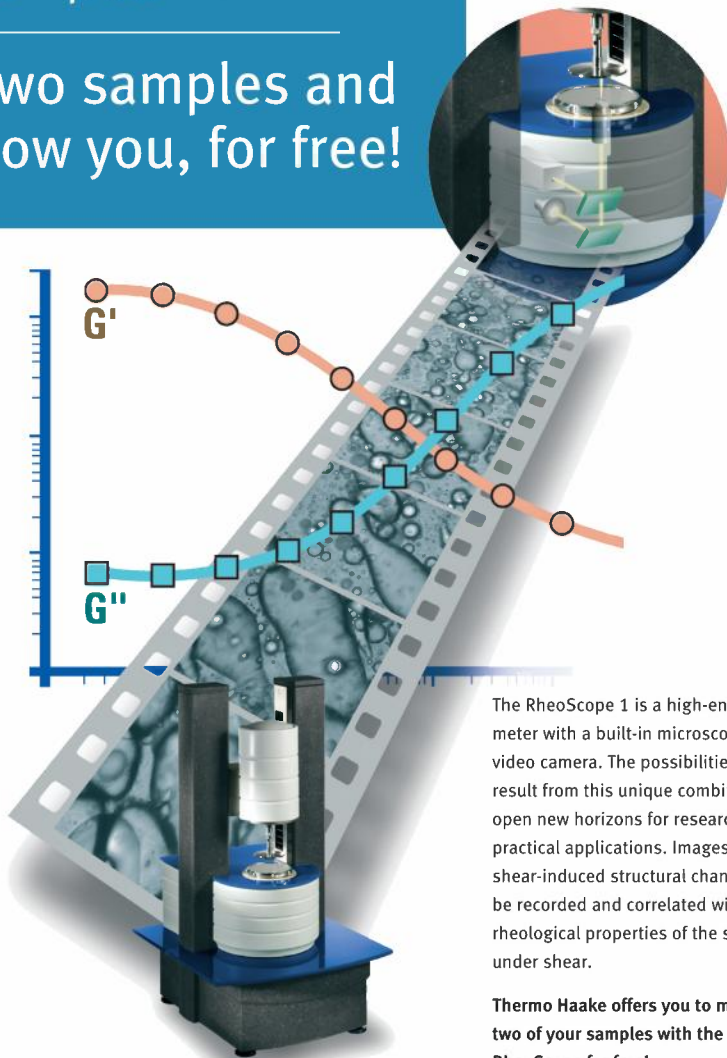
Rheology Reviews & An example of online-payment

“Rheology Reviews” are a recent high-profile supplement to the BSR publications provision and one that we are proud to vaunt. It features articles from international, high profile, invited contributors on state-of-the-art topics in rheology today.

This publication may be procured and ordered online (see point 5, below) by both BSR members and non-members. As a privilege to current members, there is a one-off discount of **£5!** New Student Members may receive a complimentary copy from February 2004. Payment amounts can

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be determined based on the individual members' profile and payment record. Payments (inclusive of p&p) should be sent to the Treasurer, and orders to Dr. David Binding (BSR News/Reviews), who will dispatch the publication upon confirmation of receipt of payment.

Online Payment

Payment of Membership fees and Rheology Reviews can now be made online through an account with the online-payment merchant "**PayPal**" [4]. Having analysed and discussed the security and feasibility issues of setting up such a system, it was deemed more practical to set up a system with an established company, than to develop our own solution.

All payment amounts are fully calculated by the BSR on our own website, before the payee is forwarded to PayPal, where the payment can be enacted. Receipts of payments are sent to both the payee and the Treasurer, as a record of payment taken. Using the online payment facility has thus far proven highly successful, with many members appealing to it as their preferred method of choice, for both membership and publication payments.

Final Remarks

The construction of the BSR site has certainly led to improved Council efficiency, on behalf of the membership handling facilities. To the future, there is concern that the site and services developed should thoroughly benefit the members of the Society as a whole, as and when fresh initiatives are introduced through this new technology. Our recommendation would be to visit the site, and try out these services, particularly if you have not done so already. We are always keen to absorb constructive feedback.

Jonathan Harvey & Mike Webster
Jan 2004

[2] Rich-Text Format Specification: <http://msdn.microsoft.com/library/?url=/library/en-us/dnrtfspec/html/rftspec.asp?frame=true?frame=true>

[3] Acrobat Reader (Freeware), downloadable at: <http://www.adobe.com>

[4] PayPal - <http://www.paypal.com>

Letter to the Editor

Dear Oliver,

It seems to me that, like many other established Scientific Societies, we in BSR are slow to respond to the rapid growth in scientific knowledge and that we continue to regard traditional Scientific Monographs, Journals and Conferences as being a natural and adequate way to communicate our findings and (sources) to follow the work of others. Nobody can deny that the number of "relevant" papers and conferences is now so large that none of us can read or attend all of those that genuinely pertain to our current interests, let alone one's base discipline or wider involvement in science. My impression is that this causes most new (young) workers to become excessively specialised and unwilling or unable to keep abreast of their discipline generally. A neglect of much past work leads to rediscoveries rather than advances, even when the relevant seminal papers are routinely referenced in recent papers. In my experience, there is now less questioning and comment from research students and post docs after seminars than I remember from my own days in that position. I would like to feel that the BSR could do something to mitigate the dangers of this growing fragmentation of research endeavour.

It becomes even more obvious in industrial research, where fewer scientists or engineers are now prepared to tackle large or complex problems; they seem satisfied to select some relatively small aspect of the whole problem that suits their background and to regard the incorporation of their work into a solution as somebody else's task. This is also noticeable in "peer-reviewed" papers (almost all of which are now from academic institutions) supposedly addressing applied problems; this is a not unexpected consequence of growing Government support for applied work to be done in Universities and a willingness of industry to decrease their R&D contributions to in-house work.

So what could be done to improve "the bang for the buck" as my US colleagues have christened the need to make research funds effective, a need that is related in my view to the deterioration in scientific broadmindedness described above?

One suggestion is to select more specific topics for short conferences (than e.g. the all-embracing one for our December meeting), at which all attendees could be expected to be interested in, and if possible knowledgeable about, the topic chosen. Within the topic, a small number of currently lively themes should be chosen, and presenters should not be expected merely to present their own latest work, but to introduce the

separate themes in such a way that real discussion ensued aimed at helping all present to make progress. Above all, it should be accepted that not all attendees could expect a dedicated slot for "their" presentation. Such is the thinking underlying the Isaac Newton Institute Programmes (also the best IUTAM Symposia and many Faraday Discussion meetings), where attendance is largely by invitation and sessions are of indefinite length. I abhor the "Chairmen" whose success is often measured by the the timing of oft repeated statements to the effect that "We must get on... with the Programme". Careful preparation for such meetings, even including "preprints", and deliberate follow-up, in the form of extensive conference reports mentioning the highlights of discussions, rather than Proceedings that repeat what has or will appear as journal papers, should be required of organisers.

The BSR website could be a suitable means of encouraging this, perhaps by carrying such preprints and reports or separately by encouraging correspondence over topical issues. To take two issues that come to mind, I would welcome a forum

- (a) for arranging a means of putting industrial rheologists in touch with specialist workers able to make rheological measurements outside the range and scope of commercial instruments, which by-and-large offer the same limited facilities in terms of deformation rates and flow fields and so rarely enable a full equation of state to be obtained or tested;
- (b) for collecting data and arguments that would lead to a realistic, comprehensive equation of state for worm-like micellar fluids, to include boundary behaviour.

These are current interests of mine, the latter issue being generally popular in terms of number of papers appearing over the past 10 years, yet by no means resolved.

JRA Pearson.

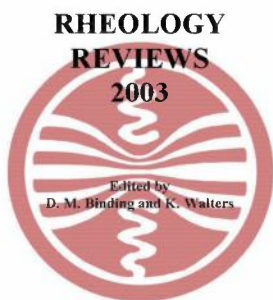
AIMS OF THE SOCIETY

The way liquids flow and solids deform affects all aspects of life.

Extraction and processing of crude oil, moulding of plastics, use of toothpaste, spreading of margarine, painting and the lubrication of joints in the human body are all examples of processes depending upon rheological behaviour. Rheology is defined as the science of the deformation and flow of matter.

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The Society is non-profit making and is registered as a charity.



THE BRITISH SOCIETY OF RHEOLOGY

'RHEOLOGY REVIEWS 2003'

**Published by the British Society
of Rheology.**

Edited by David M Binding and Ken
Walters

Normal Price £25
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The field of rheology is extremely broad and continues to grow rapidly. With applications in almost every walk of life, important work is published in a very large number of journals and other media. Although modern computer-based technology enables the *location* of *relevant* studies satisfying certain criteria, it cannot determine the *importance*, or indeed, the *significance* of the studies. For this, it is necessary to tap the knowledge and experience of the world's most prominent specialists in rheology. This publication aims to achieve this.

This first issue contains reviews of the following areas: the rheology of filled viscoelastic systems (Howard A Barnes); non-equilibrium thermodynamics (Anthony N Beris); the rheology of mobile interfaces (Gerald G Fuller); compressive rheology (Ross G de Kretser, David V Boger and Peter J Scales); finite element methods for integral viscoelastic fluids (Roland Keunings) and the modelling of entangled polymers (Tom C B McLeish). The authors are all internationally renowned specialists in their particular area. They include scientists with both academic and industrial backgrounds. Over 560 references are brought together in 6 coherent, concise treatises of the current state of knowledge in their respective branches of rheology.

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BOOK REVIEWS

An Introduction to Elastomer Molecular Network Theory

by Arthur S. Lodge. *The Banatek Press*. £18.00 (Direct from Professor Arthur S. Lodge, 3010 Woods Edge Way, Madison WI 53711, USA or by email at aslodge@wisc.edu.)

Those familiar with Arthur Lodge's two other books, *Elastic Liquids* (1964) and *Body Tensor Fields in Continuum Mechanics* (1974) – both published by Academic Press – will recognise his style in this extended version of a well-worked lecture course. It is didactic in the best sense, in that it insists on a rigorous mathematical formulation of the subject, provides a careful verbal explanation of the physical ideas and assumptions involved and sets much of the detailed mathematical analysis as exercises for the student, with solutions given at length in a final chapter. The author is to be forgiven for some typographical and internal referencing errors caused by inadequate proof reading: these slight blemishes are more than outweighed by the quality of his writing and thought behind it. Younger readers brought up on lavishly illustrated textbooks, *Nature* or *Scientific American*, may miss the colourful diagrams, boxed synopses and governing equations that go with modern multi-media teaching, but can be reassured that all the essential ideas are properly and fully presented.

The object of the text is, in the author's words suitably paraphrased, to set out "what least must be read to acquire a detailed understanding of some molecular theory of condensed phase macroscopic behaviour". It goes beyond the continuum mechanics of Truesdell, Coleman and Noll in that it builds directly on the statistical mechanical techniques of chemical physics to pass from a discrete molecular view to a continuum one, without in any sense losing any of the rigour or beauty of classical continuum mechanics and thermodynamics. The material chosen, a cross-linked rubber, has been exhaustively studied and closely approximates an ideal elastic solid and so comparison with experiment provides a satisfactory test of the theoretical arguments advanced to yield a "constitutive equation". Treloar's 1975 book *The Physics of Rubber Elasticity* can be recommended as a perfect companion volume; the insights to be gained by reading both far exceed the sum of those available by reading each one separately.

I found the 11 pages of the Preface and Introduction the most rewarding of the whole text. As expected, the case for using body tensors and associated vector and tensor fields rather than field variables defined in Cartesian space is strongly advanced, justifiably so when only homogeneous deformations are considered. Less expected was a statement of the “standard mathematical sequence: *undefined elements, definitions, axioms, and deductions.*” A clear understanding of this sequence is so important in science that all lecturers should start and continue their courses using Lodge’s approach. A lack of such understanding is often at the heart of much confusion in poorly written papers in science and engineering.

Short chapters on macroscopic continuum (mechanics), thermodynamics and statistical mechanics are not quite detailed and comprehensive enough to be sufficient for those wholly unfamiliar with the subjects. However, they will be very helpful to those with rather sketchy recollections of and insights into their earlier courses or reading. Two chapters on network theory represent the heart of the book, and are firmly based on statistical mechanics. The derivation of a full set of thermodynamical functions, from which the constitutive thermomechanical behaviour of ideal rubbers is deduced, is classical theory and one which remains the brightest gem of theoretical rheology. The relevance of the theory to real materials is covered in a short chapter on comparison with experiment.

J R A Pearson

NEWS FROM THE EUROPEAN SOCIETY OF RHEOLOGY

1st Weissenberg Awardees Minisymposium

On the invitation of BASF AG, the ESR Weissenberg Awardees met at Ludwigshafen, Germany, on October 27, 2003.



From left to right
Ken Walters, Weissenberg Awardee 2002
Martin Laun, Weissenberg Awardee 2000
Pino Marrucci, Weissenberg Awardee 1998.

CONFERENCES ANNOUNCEMENTS

INSTITUTE OF NON-NEWTONIAN FLUID MECHANICS

CONFERENCE ON “EXTENSIONAL FLOW”

Lake Vyrnwy Hotel, Mid Wales

March 21-23, 2005

Programme

The conference will commence at 12 noon on Monday March 21st 2005 and finish at lunchtime on Wednesday March 23rd 2005.

The theme of the Conference will be “Extensional Flow”. Distinguished rheologists who have already agreed to give plenary lectures include D G Baird (Virginia), D M Binding (UWA), D F James (Toronto), O Hassager (Lyngby), R Keunings (Louvain-la-Neuve), H M Laun (BASF), G H McKinley (MIT), J Maia (Guimaraes), S Muller (Stanford), J Odell (Bristol), T Sridhar (Monash), M H Wagner (Berlin), P R Williams (UWS).

Venue

The meeting will be held at the Lake Vyrnwy Hotel near the village of Llanwddyn in Mid Wales. The hotel is situated in a 24,000 acre country estate with magnificent views overlooking the lake and the Berwyn mountains. It offers excellent accommodation with full conference facilities.

Costs

The total cost of the meeting (with meals and accommodation from Monday lunch to Wednesday breakfast) will be £350. Accompanying persons sharing a room with a participant will be charged £100.

Organizers

The meeting will be organized by Dr G W Roberts and Professor K Walters FRS on behalf of the UWINNFM. Those wishing to present lectures should contact Professor Walters (kew@aber.ac.uk). Hotel bookings and registration matters should be addressed to Dr Roberts (g.w.roberts@bangor.ac.uk).



THE AMERICAN SOCIETY OF MECHANICAL
ENGINEERS

**RHEOLOGY AND FLUID MECHANICS OF
NONLINEAR MATERIALS**

November 14-19, 2004, Anaheim CA

The Fluid Mechanics Technical Committee of the Fluids Engineering Division of the ASME and the Materials Processing Technical Committee of the Materials Division are sponsoring a Symposium on the Rheology and Fluid Mechanics of Nonlinear Materials for the 2004 ASME International Mechanical Engineering Congress and Exposition in Washington ,D.C.

The purpose of this Symposium is to provide a platform for the reporting of the latest results concerning issues related to various aspects of the rheological and flow properties of nonlinear materials, and in particular advanced materials for the 21st century. Fundamental issues such as flow instabilities, inverse problems in rheology and constitutive formulations appropriate for electrorheological fluids, thin films, suspensions, slurries, emulsions, oil field fluids, paper making fluids such as black liquor, laminar and turbulent flows of polymeric and other non-Newtonian liquids, are included as well as various transport processes, bubble motions, sprays, extrusion phenomena, fibre spinning, film blowing, industrial coatings, etc. Areas of interest are not limited to these issues. Theoretical, numerical and experimental contributions are solicited.

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THE AMERICAN SOCIETY OF MECHANICAL
ENGINEERS

Advances in Materials Processing Science

November 14-19, 2004, Anaheim CA

The Fluid Mechanics Technical Committee of the Fluids Engineering Division of the ASME and the Materials Processing Technical Committee of the Materials Division are jointly sponsoring a Symposium on the “Advances in Materials Processing Science” for the 2004 ASME International Mechanical Engineering Congress and Exposition. The purpose of this symposium is to bring together researchers from academia, industry, and government to promote further development in this broad field. Topics of interest include but are not limited to:

• Process Modeling	• Mechanics During Processing
• Material Rheology During Processing	• Process Automation and Control
• Novel Processing Methodologies	• Process Optimization
• Thermal and Chemical Issues	• Sensing During Processing

Accepted papers will be published in CD-ROM format available at the meeting, and the print version of the Symposium Proceedings will be published after the meeting by ASME.

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INDUSTRY NEWS

Malvern Instruments acquires Bohlin

Malvern Instruments Ltd (Malvern, UK), has acquired Bohlin Instruments Ltd (Cirencester, UK), a major developer and manufacturer of rheology measurement systems. The acquisition was completed on 31st October 2003. Bohlin's managing director Richard Hall has joined the Malvern Instruments board and will lead the company's rheology team.

Malvern Instruments has its origins and headquarters in Malvern, UK. The company currently employ around 300 people. A global sales and service network includes subsidiary companies in North America and several major European countries as well as key partnerships in China and Japan. In addition, more than 50 local distribution partners ensure that Malvern products are installed in most countries of the world. Malvern Instruments is part of Spectris plc.

Bohlin Instruments: New Solids Clamping System

Bohlin Instruments has introduced a new fixture that enables 'large' solid samples to be tested whilst immersed within a temperature controlled liquid. The system is compatible with Bohlin CVO, CVO-ADS and Gemini rotational rheometers, and can be retrofitted to these systems.

Temperature control is by means of a Peltier device which offers simplicity and compactness as well as relatively rapid changes in set point temperature. The advantage of using a liquid heat transfer medium is near perfect temperature control compared to other methods such as forced gas or radiation.

The new fixtures were originally designed for use with bituminous mix materials where measurement of bulk properties of the mix is required together with extremely accurate temperature control. The measurement technique has already proved to be extremely effective to properly characterize certain asphalt mixes for roofing applications. Other applications also exist with certain polymeric materials.

CONFERENCE DIARY

You are also advised to visit the BSR home page where an extensive list of conferences is maintained by Chris Petrie: <http://www.bsr.org.uk/>

2004

17-19 May Santiago Chile	16th International Conference on Hydro Transport Miss K Coupar-Evans, BHR Group Ltd, Fluid Engineering Centre, Cranfield, Bedford, MK43 0AJ T: 01234 750422 F:01234 750074 E:kevans@bhrgroup.com
19 May London	Structure, Properties and Applications of Surfactants SCI Conference Department, 14/15 Belgrave Square, London, SW1X 8PS T: 0207598 1566; F: 0207235 7743 E: katherine.simpson@soci.org Info: www.soci.org
20-23 June Ischia Italy	2nd International Conference on Times of Polymers T: +39 0815010291 F: +39 081 5010295 E: alberto.damore@unina2.it Info: /www.unina2.it/top
25-27 June Crete Greece	From Hard to Ultrasoft Colloids Ritsa Karali ,FORTH, IESL P.O. Box 1527, Vassilika Vouton, 711 10 Heraklion, Crete, Greece T.:+30-281-0391300 F:+30-281-0391305, E:husc@iesl.forth.gr Info:www.iesl.forth.gr/husc
27-29 June Athens Greece	4th International Meeting of the Hellenic Society of Rheology (HSR 2004) Professor Evan Mitsoulis, School of Mining Engineering and Metallurgy, National Technical University of Athens, Heroon Polytechniou 9, 157 80 Zografou, Athens GREECE T: +30 210 7722163 F: +30 210 7722251 E:mitsouli@metal.ntua.gr Info:esperia.iesl.forth.gr/~hsr/meetings.htm
22-27 Aug Seoul Korea	XIV International Congress on Rheology Congress Secretariat, The Korean Society of Rheology, Rm.806, New Bldg., The Korea Science and Technology Center 635-4 Yeoksam-dong, Kangnam-ku, Seoul 135-703, Korea Info:www.icr2004.or.kr. E: icr2004@icr2004.or.kr
27-29 Sep Montreal Canada	Polymer Films and Fibers 2004 symposium Mrs. Sylvie Lamontagne,NRC/IMI 75, de Mortagne Boucherville, Québec, Canada, J4B 6Y4 T: (450) 641-5238 F: (450) 641-5105 E:sylvie.lamontagne@cnrc-nrc.gc.ca Info:www.films-fibers2004.com

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2004	
14-19 Nov Anaheim CA USA	ASME Advances in Materials Process Science Prof Dennis A. Siginer ,Wichita State University 1845 Fairmount ,Wichita, KS 67260 T: +1 316 978-3400 F: +1 316 978-3853 E: dennis.siginer@wichita.edu Info: www.asmeconferences.org/congress04
14-19 Nov Anaheim CA USA	ASME Rheology and Fluid Mechanics of Nonlinear Materials Prof Dennis A. Siginer ,Wichita State University 1845 Fairmount ,Wichita, KS 67260 T: +1 316 978-3400 F: +1 316 978-3853 E: dennis.siginer@wichita.edu Info: www.asmeconferences.org/congress04
2005	
13-17 Feb Lubbock TX USA	77th Annual Meeting of The Society of Rheology Info: www.rheology.org
21-23 Mar Powys UK	Extensional Flow Dr Gareth Roberts, School of Informatics, University of Wales, Bangor, Gwynedd LL54 7UF, UK T: 01248 351151 x2480 F: 01248 355881 E: g.w.roberts@bangor.ac.uk
21-23 April Grenoble France	AERC 2005 Info: www.rheology-esr.org/AERC/2005
16-20 Oct Vancouver Canada	78th Annual Meeting of The Society of Rheology Info: www.rheology.org
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COURSES

2004	
28-29 April Warwickshire UK	Rheology Workshop Steve Goodyer, Paar Scientific Ltd, 13, Harforde Court, John Tate Road, Hertford, SG13 7Q T: +44 (0)1992 514730; F: +44 (0)1992 514739 E: steve.goodyer@anton-paar.com
8-11 June Glasgow UK	Theoretical, Experimental And Industrial Aspects Of Rheology Dr Nick Hudson, Dept P&A Chemistry, University of Strathclyde, Glasgow, UK, T:0141 582162 F:0141 5484822 E: n.e.hudson@strath.ac.uk
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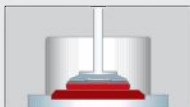
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