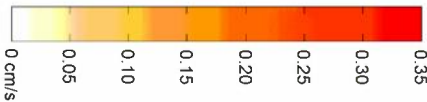
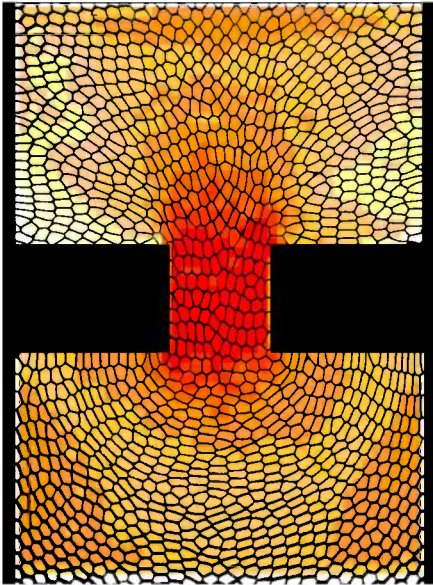


THE BRITISH SOCIETY OF RHEOLOGY

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THE BRITISH SOCIETY OF RHEOLOGY

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THE BRITISH SOCIETY OF RHEOLOGY



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CONTENTS

Editorial	2
In Memoriam: Joachim Meissner 1929-2011	3
President's Report on Rheology Reviews	4
BSR News	
BSR Student Travel Awards	7
BSR Annual Award and Vernon Harrison Award	8
Notice of the 70 th Annual General Meeting	8
Minutes of the 69th Annual General Meeting	10
Aims of the Society	13
Report on Chocolate Congress 2010	14
Commentary on the Council Meetings	16
New Publication(s) on Rheology	18
Non-Newtonian Club News	20
Commentary on Non Newtonian Club Meeting	21
Conference Announcement	
BSR 2011 Midwinter Meeting	22
UK Colloids 2011	22
Industry News	24
Conference & Courses Dairy	26

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EDITORIAL

SUBMISSIONS TO THE BULLETIN

Submissions to the Bulletin may be made by any practical means – post, email, disk, fax, pigeon, donkey, guide dog, *et cetera* but electronically is preferred (saves typing...). Most packages supported (Word, TeX, LaTeX, WordPerfect, ASCII, RTF) but always provide a contact name, address, e-mail, or telephone number in case of problems. The deadline for submission is Feb. 15th, June 15th and Oct. 15th, respectively, for three issues annually. As always, all contributions are gratefully received. Late copy can sometimes be accommodated, however the facilities of the BSR and ESR web sites may also be appropriate. Please contact the Editor (xue-feng.yuan@manchester.ac.uk) for details.

COVER ILLUSTRATION

2D Constriction Flow of Foams: The image shows an experiment in which a monolayer of bubbles, i.e. a quasi-2D foam, flows from top to bottom through a 4:1 contraction. An instantaneous image of the foam structure is superimposed on a colour map representing velocity magnitude. The channel width up- and downstream of the contraction is 12cm and the channel is 3mm deep. The gas flow-rate is 0.023 litres per minute and liquid fraction is 0.0037. For further details see S.A. Jones, B. Dollet, N. Slosse, Y. Jiang, S. J. Cox and F. Graner, Two-dimensional constriction flows of foams Coll. Surf. A (2010), doi:10.1016/j.colsurfa.2010.11.054. Image courtesy of Sian Jones, Institute of Mathematics and Physics, Aberystwyth University (saj@aber.ac.uk).

We are always looking for appropriate images for the front cover of the Bulletin and Rheology Abstracts (preferably of a rheological nature!). Please contact either Xue-Feng Yuan (xue-feng.yuan@manchester.ac.uk) or Nick Hudson (n.e.hudson@strath.ac.uk). Contributions are always welcome!

Professor Joachim Meissner (1929 – 2011)



Sadly, on 7 January 2011, Joachim Meissner passed away after battling with cancer for several months. Joachim will be missed by the rheological community worldwide and remembered as a dedicated experimentalist fascinated by the unusual and the impossible, with a colourful personality.

Joachim was born 1929 in Saxony, Germany, and graduated at the University of Stuttgart in physics in 1958 with a PhD thesis on “Investigations into the plasticity of Ni-Co single crystals”. He joined BASF AG, Ludwigshafen, where he set up rheology labs and as of 1963 Joachim had been a regular attendee at national and international rheology conferences. 1974 Joachim followed a call of the Swiss Federal Institute of Technology (ETH), Zurich, to accept

Chair of Polymer Physics. There he was dedicated to research and education in material engineering with obvious focus on rheology. 1990 Joachim founded the Swiss Group of Rheology. Joachim retired 1998 and continued to be active in rheology. He may be best known for inventing the rotary clamp elongational rheometer. Other achievements include the Annual Award of the British Society of Rheology 1981, the Lodge-Meissner relationship relating normal and shear stresses in step-shear experiments, significant development of elongational rheometry and normal stress measurements, Laser Doppler velocimetry and particle tracking in polymer melts normal stress. Read the Laudatio on the occasion of Joachim's retirement in *Rheologica Acta* 35:101-102 (1996) by Manfred Wagner and Hans Christian Öttinger for more information on Joachim's achievements and key references.

President's Report on Rheology Reviews

Starting in 2003 the British Society of Rheology published a series of books containing review articles on current research in the area of rheology. This initiative stemmed from a suggestion from David Binding that the BSR should start a new publication in addition to Abstracts and the BSR Bulletin. It was felt that in a highly multi-disciplinary field such as rheology, it was hard to keep abreast of all the developments taking place across the range of different disciplines. Although there were a number of well established international journals dedicated to rheology, unlike other subjects, such as (Newtonian) fluid mechanics, there was no publication dedicated to review articles to provide an overview of the subject. Therefore modelled on the highly successful “Annual Reviews of” series, BSR Council decided to launch an annual book of review articles called “Rheology Reviews”.

The response from the rheology community was very encouraging. Many of the world's leading rheologists agreed to write review articles. Although a BSR publication Rheology Reviews was always an international project with reviewers drawn from across the world. The first edition edited by David Binding and Ken Walters contained reviews by Anthony Beris (USA), Roland Keunings (Belgium) and David Boger (Australia) as well as Howard Barnes and Tom McLeish from the UK. From 2005 Roland Keunings took over from Ken Walters as editor.

However, despite the eminence of the reviewers and the quality of their articles sales of Rheology Reviews were disappointing. Not only was this a financial burden for the Society, but it was meant that author's reviews were not making the impact they merited. In order to increase its outreach, BSR Council took the decision to include Rheology Reviews in the publications distributed free to members.

Changes in academia and the rise of the WWW also impacted on Rheology Reviews. Rheology Reviews was published as book rather than a serial, which meant that articles did not appear in online databases such as Web of Science, making the reviews less visible, and also (in these days of academic metrics) that citations were not recorded. Production difficulties also lead to delays in publication and it became harder to find authors willing to write reviews.

With the Journal of Non-Newtonian Fluid now publishing review articles BSR Council decided reluctantly not to publish any further editions of Rheology Reviews. We believe that while there is a still need for review articles in Rheology that the format of a book of reviews is no longer appropriate in the digital age. Furthermore, in order to give the existing articles the maximum possible impact we intend to make them freely available through the BSR website. In its six editions Rheology Reviews provides an authoritative guide to the world of rheology and

giving them the widest possible exposure is the appropriate legacy for this project. The books remain available for purchase through the BSR website

Rheology Reviews 2003

- 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 & Peter J Scales)
- Finite element methods for integral viscoelastic fluids (Roland Keunings)
- The modelling of entangled polymers (Tom C B McLeish)

Rheology Reviews 2004

- Failure and recovery processes in polymer melts (Yogesh M Joshi & Morton M Denn)
- The rheology of food dispersions (Crispulo Gallegos, José M Franco & Pedro Partal)
- Micro-macro simulation using models based on kinetic theory (Roland Keunings)
- The dynamics of liquid drops (Stefano Guido & Francesco Greco)
- Drag reduction in turbulent flow of polymer solutions (Michael D Graham)
- Breakup of non-Newtonian liquid jets (Michael Renardy)
- Flow past spheres and bubbles (Bruce Caswell, Octavio Manero & Baltasar Mena)

Rheology Reviews 2005

- Visco-elasto-capillary thinning and break-up of complex fluids (Gareth H McKinley)
- Rheology of solid polymers (Igor Emri)
- Rheology and morphology development in immiscible polymer blends (Peter Van Puyvelde & Paula Moldenaers)
- Bubble dynamics and cavitation in non-Newtonian liquids (Emil A Brujan & P. Rhodri Williams)
- Applied rheology in the protective and decorative coatings industry (Richard R Eley)

Rheology Reviews 2006

- The rheology of high aspect ratio nano-particle filled liquids (D W Litchfield & D G Baird)
- Rheology of fresh cement and concrete (P F G Banfill)
- Instabilities in extensional deformation polymer processing (H W Jung & J C Hyun)
- Molecular dynamics simulation and its application to nano-rheology (A Jabbarzadeh & R I Tanner)
- The rheology of worm-like micellar fluids (V J Anderson, J R A Pearson & E S Boek)
- Rheometry for blood coagulation studies (P A Evans, K Hawkins & P R Williams)

Rheology Reviews 2007

- Polymer melt viscoelasticity: what we can learn from molecular simulations (V G Mavrantzas)
- Quantitative tube model predictions for the linear viscoelasticity of linear polymers (E van Ruymbeke, C-Y Liu & C Bailly)
- Flows of viscoplastic materials: models and computations (E Mitsoulis)
- Model soft colloids out of equilibrium: glass-like and re-entrant transitions (D Vlassopoulos, E Stiakakis & M Kapnistos)

Rheology Reviews 2008

- Strong Flows of Viscoelastic Wormlike Micelle Solutions (Jonathan P. Rothstein)
- Rheological Issues in the Paper Industry (Douglas W. Bousfield)
- Flow and Texture Modeling of Liquid Crystalline Materials (Alejandro D. Rey)

Oliver Harlen
BSR President

BSR NEWS

BSR Student Travel Awards

The 301st Council Meeting established the principle that student travel grants have the objective of encouraging students to disseminate their research. Applicants for a student travel bursary must normally have been a member of the Society for 9 months, may be working worldwide and presenting research at a conference, by paper or poster. The grant will be made on receipt of a report on the event.

The British Society of Rheology wishes to establish a transparent mechanism for the award of travel bursaries and to solicit applications from its student membership. Travel bursaries are available to student members of the Society to present their research at a conference that contains a strong rheological element, in situations where no other sources of funding are available to cover the whole cost of the meeting. Suitable conferences include the International Congress of Rheology, the Annual European Rheology Conference and conferences organized by the Society.

The next closing date for consideration of the award of a travel bursary is 31st March 2011 with successful applicants notified by 30th April. Applicants should include in their submission the name and location of the conference, the title, authors and abstract of the paper submitted to the conference, a breakdown of the projected costs of attending the meeting and a supporting letter from their research supervisor. The support of the British Society of Rheology should be mentioned in the conference presentation. The Society's logo may be used for this purpose. Payment of the bursary will be made on receipt of a report on the conference. The conference report will be published in the Bulletin of the Society. Applications for a travel bursary should be sent to the Secretary (secretary@bsr.org.uk).

Helen J Wilson
BSR Honorary Secretary

BSR Annual Award and Vernon Harrison Award

Nominations are invited for the BSR Annual Award 2011. Each year the BSR makes an award to an individual in recognition of their contributions to rheology. The criteria for the award focus on the scientific merit of the candidate: a person who has made a significant contribution to rheology either through a single paper or more sustained activity. The recipient in 2010 was Joao Maia; in 2009, Jeff Odell; and in 2008, Peter Olmsted. Nominations, with a brief supporting statement, should be sent to the President on president@bsr.org.uk by the end of May 2011.

The BSR also awards the Vernon Harrison Award annually, for the most distinguished PhD thesis in rheology. Dr Steven Lind of Cardiff University was the 2010 winner with his thesis on "A Numerical Study of the Effect of Viscoelasticity on Cavitation and Bubble Dynamics". The next award will be for a thesis examined between September 2010 and August 2011; Nominations should be received by the secretary by the end of September 2011. More details will be in a future Bulletin. Nominations are invited for the BSR Annual Award 2011

Helen J Wilson
BSR Honorary Secretary

Notice of the 70th Annual General Meeting

The 70th Annual General Meeting of the British Society of Rheology will be held at Portmeirion, Wales, on Tuesday 19th April 2011, immediately following the end of that afternoon's scientific sessions at the UWNNFM meeting.

The minutes of the 69th Annual General Meeting follow this notice.

Members are reminded that, under rule 7(b), the business of the meeting includes:

- (i) Election of Officers and Council members.
- (ii) Receipt of a report and accounts from Council.
- (iii) Dealing with matters raised by Council or by any other member and receiving suggestions from members for consideration by Council.

Council's nominations for Officers and Council members are as follows:

President	Dr. Bill Frith
Hon. Secretary	Prof. Simon Cox
Hon. Treasurer	Mr. Steve Goodyer
Membership Secretary	Prof. Tim Phillips

Bulletin Editor
Abstracts Editor

Dr. Xue-Feng Yuan
Dr. Alexander Lubansky

Ordinary members of Council

Dr. David Binding

Mr. Peter Hodder

Dr. Nick Hudson

Dr. Rob Poole

Dr. Helen Wilson

Dr. Bettina Wolf

Further nominations for Council or for any of the Offices are invited. Nominations should be sent to the Secretary or made at the meeting (rule 5(b)). Nominees must be members of the Society, must confirm in writing that they are willing to stand and must be proposed and seconded by two members of the Society.

In addition, Council wishes to propose three motions for consideration by the AGM.

Resolution 1:

To add the following sub-point to the Constitution:

5(d) At the end of the two-year term of office, the outgoing President automatically assumes the role of Immediate Past President for a further two years. The Immediate Past President may attend Council meetings and advise Council, but ceases to be a Trustee and does not have voting rights.

Resolution 2:

To appoint Rob Poole (ordinary Council member) as the Society's representative to the European Society of Rheology for their Council meeting in Suzdal, May 2011.

Resolution 3:

Council suggests that the membership fee be increased to £27 for those members who choose to pay their annual subscription by credit card. The increase is to cover the fees charged to the Society for these transactions. The membership fee will remain at £25 for members paying their annual subscription by standing order, cheque or PayPal (with PayPal fees, currently £1.05-£1.18, paid by the member).

The Hon. Secretary would be pleased to receive notice of any matter that any member wishes to raise at the AGM.

Helen Wilson
BSR Honorary Secretary

Minutes of the 69th Annual General Meeting

Lake Vyrnwy Hotel, Mid Wales

Tuesday, March 30th, 2010, starting at 5.15pm

1. Present

The President and 22 other members. (The Hon. Secretary arrived later.)

2. Apologies for absence

Received from Phil Banfill, Simon Cox, Peter Hodder, Nick Hudson, Phil James, Alex Lubansky, Anthony Pearson, J H Prentice and Bettina Wolf.

3. Minutes of the 68th AGM

These were agreed as a true record of the meeting and signed by the President.

4. Matters arising

There were none.

5. Reports of the officers.

5.1. President

Oliver Harlen began by thanking Tim Phillips and his team for their splendid organisation of the Cardiff AERC meeting during which he had taken office. The large European meeting had attracted a good number of non-European delegates.

In December the usual BSR mid-winter meeting had been hosted by Edinburgh University on the theme of "The flow of soft matter". This continued the success of previous meetings in London and Leeds, with over 40 delegates including several international speakers and a competitive poster session. He expressed his thanks to Job Thijssen and Rut Besseling for organising the meeting, and to TA Instruments for sponsoring the poster prize. This coming December's meeting will be in Nottingham on a food, pharma and bio theme, organised by Bettina Wolf.

The other main activity of the society apart from meetings is publications. The Bulletin, under the editorship of Xue-Feng Yuan, continues to be an informative and varied read with a number of contributed articles. Rheology Abstracts continues to provide a unique service in collating together the varied publications on rheology. Nick Hudson continues to do sterling work here as both abstracts editor and publications manager. Finally Rheology Reviews. This has had a troubled time recently, with low sales and publication delays. The delays have been addressed, and both the 2007 and 2008 issues appeared this year. He thanked Nick Hudson for making that happen. Focusing on sales, Council had decided that if we were to continue we required a partner who could market this more widely, so we've agreed to publish future editions through the Royal Society of Chemistry with a discount to BSR members.

Finally he spoke about members of Council, who do much of the hard work in running the society. He bagen with the two stalwarts of Council, Nick Hudson and David Binding, who had both served an extra 5th year in their Officer posts as Abstracts Editor and Treasurer respectively. Also standing down from his Officer position at this AGM was Phil James as Membership Secretary. He had already referred to Xue-Feng Yuan's contribution as Bulletin Editor. He thanked the ordinary members of Council: Simon Cox, Steve Goodyer, Tim Phillips, Rob Poole, Bettina Wolf and Mike Webster. Mike is also stepping down this year after many years' service to the Society, but will continue to provide liaison with the ESR. Finally, he thanked Helen Wilson as Secretary, who had continued in her role despite having a baby last September. Rob Poole had kindly taken over some of the secretary's tasks during the first few months.

Oliver then thanked our industrial sponsors - the instrument manufacturers - who provide a valuable source of income to the Society.

5.2. Treasurer

David Binding presented the Treasurer's report. This showed a headline loss of £7,000 but this was not representative. Two issues of Rheology Reviews had appeared this year, with the associated printing costs (roughly £3,300 for each issue). In addition, there are about £5,000 of invoices for advertising currently unpaid, which are being chased by Steve Goodyer. The membership subscription income had risen from 2008. Overall, he reported that the accounts were stable. Finally, there was a one-off windfall of £5,500 to come into the accounts in the coming year, which had accrued in a disused account at RBS in Glasgow.

5.3. Hon. Secretary

The Secretary did not arrive until later; she then reported that the Vernon Harrison Doctoral Prize had been awarded to Dr. John Duffy from the University of Nottingham. He was presented with the award, and gave his lecture, at the midwinter meeting in Edinburgh. At the same meeting, the Annual Award was presented to Jeff Odell. The poster prize there was won by Zhuo Li of the University of Manchester.

5.4. Membership Secretary

Tim Phillips reported that the total membership at 29th March 2010 was 416, of whom 74 (18%) were Honorary Members, 300 (72%) UK-based, 63 (15%) from Europe and 53 (13%) from the rest of the world. This was an increase of 72 since last year's AGM, due in part to

- (a) 35 new members following the 5th Annual European Rheology Conference in Cardiff in April 2009,
- (b) 18 new members following the BSR mid-winter meeting in Leeds in December 2008.

Two new Honorary Members had been elected during the year: Mike Cates and Ton Van Vliet. Tim also reported that take-up of membership following our offer of a year's free membership (after scientific meetings, for those who had never been a member) was patchy, but he considered it to be a worthwhile exercise as we have gained new members through that route. These potential members are now asked to confirm that they wish to join the BSR before they are issued with access to the website, and are then advised to enter their personal details so as to receive all BSR publications.

5.5. Bulletin Editor

Xue-Feng Yuan thanked all those who write articles for the Bulletin. He also made an appeal to the membership for attractive images for the front cover.

5.6. Abstracts Editor

Nick Hudson's report was not presented as it had been sitting in the Secretary's email inbox at the time of the AGM; however, he would have reported that for Rheology Abstracts, he had just finished volume 52(3&4) and passed it to Publications. Most of volume 53(1&2) was in hand, and he will liaise with his successor on procedures for a smooth handover. He thanked all those who had helped over the last 5 years of his Editorship, particularly the Abstractors. As we are still making a (small) profit on RA, he expressed his view that it should keep going for another few years, and made an appeal for abstractors. He wished his successor all the best.

As publications manager, he reported that Bulletin 51(1) is being printed, and should be posted out to members next week. Abstracts 52(3&4) goes to the printers today. 53(1&2) should be ready around July, and 53(3&4) around November. Rheology Reviews volumes 5 & 6 (2007, 2008) were published during the year. Volume 7 (2010) is intended for publication late summer.

6. Officers and Council members.

Since the notice of the AGM had been sent out, Alex Lubansky had been nominated as Abstracts Editor and Peter Hodder as an ordinary member of Council. There being no further nominations, the Officers and Council members nominated were approved unanimously by those voting at the meeting. The Council for 2010-11 was elected as follows:

President	Dr. Oliver Harlen	Ordinary Members of Council
Hon. Secretary	Dr. Helen Wilson	Dr. David Binding
Hon. Treasurer	Mr. Steve Goodyer	Dr. Simon Cox
Membership Secretary	Prof. Tim Phillips	Mr. Peter Hodder
Bulletin Editor	Dr. Xue-Feng Yuan	Dr. Nick Hudson
Abstracts Editor	Dr. Alex Lubansky	Dr. Rob Poole
		Dr. Bettina Wolf

7. Any other business

There was none.

Date of next meeting. The 70th Annual General Meeting of the Society would be held in March 2011 in Portmeirion.

There being no other business the meeting closed at 5.45pm.

H.J. Wilson, BSR Hon. Secretary

O.G. Harlen, BSR President.

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.

If your work is concerned with rheology in any way, then you have much to gain by joining the British Society of Rheology, including

- advance your knowledge by attending our conferences
- receive publications including Rheology Abstracts, Bulletin and Rheology Reviews
- learn of current instrumentation and accessories plus new developments.
- access to non-Newtonian Club linking industry and academia
- travel Grants, Poster Prizes, Career Opportunities
- network with fellow members who, while working in a different discipline or industry, may be facing similar problems to yours

The Society is non-profit making and is registered as a charity. For the details, you are warmly welcome to visit our web site <http://www.bsr.org.uk/>, and to apply for membership on-line.

Report on Chocolate Congress 2010

Köln, Germany, December 2010

The ZDS Chocolate Congress is a biannual event held in Köln (that's Cologne to the tourists) in December, conveniently coinciding with Christmas markets! It is the largest European convention on chocolate and has a strong industrial focus, with delegates attending from all parts of the chocolate supply chain: from cocoa butter suppliers and ingredient suppliers to machinery and chocolate manufacturers. The 2010 event was the largest to date, with over 400 delegates. Some chocolate is eaten, but much more is talked about.

The technical program featured keynote presentations interspersed by two parallel sessions. The keynote presentations focused on market-wide topics such as legislation, health, cocoa supply and energy. Political developments in countries like the Ivory Coast were very much in people's minds on this occasion, as Cote d'Ivoire is the world's largest manufacturer of cocoa products. One of the two parallel sessions concerned manufacturing topics – including rheology – while the second covered a range of topics including cocoa and the cocoa market, ingredients and food safety. Those familiar with chocolate will know that it is a complex material – in the melt, a highly dense suspension of sugar and cocoa solids in a cocoa butter liquid phase – with particular challenges imposed by its non-Newtonian rheology and its polymorphic crystallization behaviour. The latter is complicated further by the variation in composition of cocoa butter with source and harvest.

Crystallisation (and particularly the control of the tempering stage) and pumping high viscosity chocolate were themed topics. In terms of rheology, the Casson model has been used for many years to describe the viscosity of molten chocolate. It was evident from the presentations that (i) the Casson model is inadequate, particularly when processing viscous chocolates or during unsteady state operations, and (ii) many people nevertheless continue to use it. Two of the talks caught my attention: one by Gottfried Ziegleder (Weihenstephan) elucidating the uncontrolled thickening of molten white and milk chocolates during storage, which he demonstrated to be due to crystallisation of amorphous lactose. This is a particular feature of continental milk chocolates, which do not employ the crumb route favoured by many UK manufacturers and therefore contain more moisture. The second, by Bettina Wolf (Nottingham), employed live sampling to determine what happens to chocolate in the mouth before it is digested. Two chocolates with different mouthfeel were compared: one melted faster and was more 'coating', while the other was harder at first bite. Chewing patterns and composition were eliminated as sources of the difference, but they showed distinct differences in the

phase inversion that occurs on contact with saliva. Clearly there is plenty of work (and rheology) to do in order to understand chocolate.

Several of the poster, parallel and keynote talks were connected with the EU funded project 'Propraline' (see www.sik.se/propraline/). Its aim is to generate a better understanding of bloom formation and cracking in chocolate pralines and develop processing solutions for tailor-making cracking and bloom resistant chocolate microstructures. The presentations indicated that progress is being made, particularly with the availability of current analytical techniques to measure crystal forms, and computer methods for modeling the results.

Ian Wilson, Cambridge



Commentary on the 330th Council Meeting of the BSR

Oxford University
22nd September 2010

On a day that saw the sun shine with such intensity it tempted us with the possibility of an Indian Summer, the BSR council converged on one of Britain's great seats of learning, Oxford University. It was my first ever council meeting and so a mixture of excitement and the unknown filled my car journey. I knew one thing and that as a newbie I would be "volunteered" for something and this is it.

Our host, abstract editor, Alex Lubansky greeted us with a welcome lunch and as the conference table places filled one by one, the sandwiches disappeared, giving us all food for thought for what discussions and decisions were to come.

After the usual review of the minutes and actions from the last meeting, the officers presented their reports and all in all it was good news all round. It was apparent that the many good contributions by individuals, as well as the Society as a whole, have inspired others and long may this continue. Amongst the main topics of interest were the nominations of award winners and it seems there was a substantial list of nominees, all worthy of close consideration but finally the tough choice was made. Future meetings was an extensive list, knowing that the Non Newtonian club and Mid-Winter meetings were all in hand, attention moved towards next year and the AGM at the INNFM 20th Anniversary conference in Portmeirion, and even the Mid-Winter of 2011.

Other topics were a little easier to cover and so the meeting progressed towards a successful conclusion and even an early close. So my first council meeting over, my first but hopefully not last duty, and I left knowing that we would all convene again at the Mid-Winter meeting in Nottingham.

Peter Hodder
Ordinary member of Council

Commentary on the 331st Council Meeting of the BSR

University of Nottingham, Sutton Bonington
14th December 2010

The very successful Midwinter Meeting had just finished, and the delegates were enjoying lunch prior to making their way home. All except the Council members, who had to grab their cases and their lunches, and move to another building across the Campus. It was quite interesting moving through the Food Science Department with many people enquiring as to whether these were samples for testing that were being carried! We finally arrived at a meeting room tucked away at the back. We had a nice view of the countryside through the fire doors, which were blocked by a

large heater – it being the middle of winter. After a willing volunteer had been found to write this commentary (well I would say that, wouldn't I?), we settled down to business. The Council's nomination for next President, Bill Frith, had joined us. A start was made with the previous meeting minutes & actions (or inactions in some cases!). A discussion ensued as to whether subscriptions should go up next year, with a discount to those paying by Standing Order – more at the next AGM.

The Officers then gave their reports. All seemed to be managing their briefs well, though some extra information was required in certain areas; to be obtained for the next meeting or promulgated by email.

One major point to arise from these concerned the Website – what do we wish from it, and who should do what to maintain it? Answers on a postcard to the Secretary!

The Bulletin Editor is urgently seeking leading articles.

As regards the Non-Newtonian Club, it was agreed that we should still keep it going. One or two venues/sponsors were mentioned – let us hope that they came to fruition. The Club is an ideal forum for academia to meet industry, in an informal (and free) atmosphere, and discuss mutual problems/solutions.

Thoughts then turned to advertising – by manufacturers in our publications/website. A new business plan will be put into place shortly.

As regards Scientific Meetings, we decided that the next Midwinter Meeting would take place at University College London, at a date & time to be decided. As 2012 was a year of the International Congress, there would not be an INNFM meeting in that Spring, so council members were urged to think about the BSR arranging something then, as we still needed to hold an AGM around that time.

Finally, arrangements for the forthcoming AGM (see details in this Bulletin) were discussed – nominations for President & Council Members, and any resolutions to be advertised.

We then all scattered to the 4 corners of the UK.

Nick Hudson
Ordinary member of Council

New Publication(s) on Rheology

In "the Encyclopedia of Life Support Systems" (EOLSS) sponsored by UNESCO (<http://www.eolss.net>).

Rheology - Volume 1

No. of Pages: 498

ISBN: 978-1-84826-769-5

Price: €216.00

Rheology - Volume 2

No. of Pages: 468.

ISBN: 978-1-84826-770-1

Price: €216.00

Editor: Professor Crispulo Gallegos (Complex Fluid Engineering Laboratory, Departamento de Ingenieria Quimica, University of Huelva, 21071 Huelva, Spain)

ABSTRACT

This book aims to give basic and comprehensive information on "Rheology", contained in the 23 chapters, which make up the contents of the two volumes of this Encyclopedia. These chapters can be divided into five main areas, namely, basic concepts of rheology; rheometry; rheological materials, rheological processes and theoretical rheology. Of course, many of the chapters contain material from more than one general area. This is expected and supports the view that rheology is an interdisciplinary subject which embraces many aspects of mathematics, physics, chemistry, engineering and biology.

The collection of chapters in Volume 1 begins with one on "The History of Rheology", written by K. Walters. Chapter 2 (by Alex Malkin) is devoted to the characterization of the rheological behaviour of different materials based on relationships between stresses, deformations, and deformation rates, which are the fundamental concepts of continuum mechanics. Chapter 3 (written by J.M. Franco and P. Partal) introduces the so-called Newtonian fluid and its governing equations. Non-Newtonian fluids are reviewed in Chapter 4 by P. Partal and J.M. Franco. Chapter 5, written by C. Gallegos and F. Martínez-Boza, deals with basic concepts on linear viscoelasticity. Chapter 6 (prepared by J. Dealy) presents an overview of the important subject of non-linear viscoelasticity and Chapter 7 by F.A.Morrison discusses constitutive modelling. In recent years, so-called computational rheology has come of age and is now seen as a very important tool in process modeling. It is fitting therefore that a comprehensive chapter on the subject is included in the volume, written by M. Webster et al. (Chapter 8). There is no doubt that a vast amount of rheological research is devoted to *rheometry*. An overview on this subject is the goal of Chapter 10 (by H. Barnes and J. Maia). Chapter 11, prepared by P. Van Puyvelde et al., reviews the use of rheo-optical methods to characterize the evolution of complex fluid microstructure during flow. High-pressure rheometry is considered by Martinez and Gallegos in Chapter 12, who review the mathematical equations that have been proposed for describing the dependence of viscosity on pressure and temperature. Masschaele et al review the

different methods available to characterize the rheological properties of interfaces in Chapter 13.

It is probably true to say that the vast majority of materials encountered by rheologists are fluid-like, and solid-like materials have to be viewed as a small (but nevertheless important) subset. As a consequence, the current book majors on what are generally called non-Newtonian fluids, although one chapter written by I. Emri is devoted to the solid state, mainly focused on solid polymers (Chapter 9).

Volume 2 opens with a chapter by K. Walters on “Non-Newtonian Fluid Mechanics”, which contains a reasonable level of theoretical rheology, especially as this is seen to fit into the general scheme of things (Chapter 14). Since the current book majors on fluid-like materials, there are important chapters on polymer rheology written by P. Moldenaers and J. Mewis (Chapter 18), multiphase systems like emulsions, suspensions and foams discussed by P. L. Maffettone and F. Greco (Chapter 19), materials encountered in the food industry considered by M. Stading (Chapter 20), and a chapter on surfactants written by O. Manero and co-authors (Chapter 21). Finally, there is a chapter devoted to materials encountered in Biorheology written by B. de Cindio and D. Gabriele (Chapter 22). Since many materials with complex rheological properties are continually being subjected to industrial processes, *process modeling* must be an important area of rheological research. So, chapters are provided on various aspects of the subject, including *Non-Newtonian Heat Transfer* by F. T. Pinho and P. Coelho (Chapter 16) and *Rheology in Materials Engineering* by J. Maia et al. (Chapter 17). The chapter by Choplin and Marchal is dedicated to mixing rheometry (Chapter 15). In addition, an important chapter is included on *Environmental Rheology*, provided by David Boger. *Environmental Rheology* is the application of basic rheological principles for waste minimization in the resource industries (Chapter 23).

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The Non-Newtonian Club (NNC) is an informal rheology discussion group which provides low-cost, informal, one-day meetings which provide an excellent forum for industrial and academic rheologists to meet together informally to present work in progress, raising key needs and concerns, and discussing unresolved practical and modelling issues that may be inhibited at more formal conferences. The agenda of the most recent BSR NNC meeting and the corresponding abstracts can be found at <http://innfm.swan.ac.uk/bsr/frontend/nonnewtonianclub.asp>.

The Non-Newtonian Club Meetings are held 2 - 3 times a year and provide a forum for those practicing rheology to meet. Presentations (typically 20-30 minutes) are made by academic and industry-based scientists, as well as young scientists, presenting on a range of topics that involve rheology in a relatively informal and friendly environment. To encourage phd students and 'young' scientists to present, we offer an award for the best presentation from phd students or 'young' scientists. We endeavour to keep these meetings free. Should you wish to host, sponsor, or participate in such an event, please let me know.

Attendance is free of charge and includes tea/coffee and lunch. The best young speaker will receive a prize sponsored by Anton Paar. For further information visit the BSR website or contact Dr Bettina Wolf at bettina.wolf@nottingham.ac.uk.

Bettina Wolf
Industry and Non-Newtonian Club Coordinator

Commentary on Non Newtonian Club Meeting

Imperial College, 10th November, 2010

Despite student protests about government funding and problems with the District Line around 15 people managed to assemble at Imperial College for the Non Newtonian Club.

Host Maria Charalambides kicked off proceedings with a brief summary of the various rheological projects being undertaken by students in Mech. Eng. These had a strong bias towards dough but also included other materials.

Gerry Meeten from Schlumberger then spoke about soft solids within the field of oilfield services. Drilling fluids and filter cakes were introduced along with some of the issues in measuring such materials (interfacial slip and relative migration). Resolving these issues using squeeze flow was discussed along with some squeeze flow theory and practical measurements. Measurements using vanes and textured plates with rotational instruments were also covered. Finally the use of simultaneous measurements of conductivity/ dielectric properties and rheology was discussed for kaolinite clay applications. As usual Gerry received an appreciative round of applause from the audience and he finished exactly on time despite fielding several questions requiring a detailed response.

An hour long lunch saw several groups discussing many different aspects of rheology in the informal fashion intended for these meetings.

After lunch Mohd Afandi P Mohammed, one of Maria's students, presented his work on the mechanical characterisation and constitutive modelling of wheat flour dough. Dough is of course also a soft solid so a nice link was made with the morning session. Afandi gave a clear explanation of dough formation and structure as well as various rheological tests used to characterise it (tension / compression/ shear). Dough and gluten results for these tests were compared and the compression data gave the best fit with various models. Afandi fielded questions for around 30 minutes at the end of his presentation and did a good job in answering all of these questions (suffering for being the lone student speaker).

Thanks to Maria Charalambides and Bettina Wolf for organising the meeting and to Gerry and Afandi for speaking. Last but not least thankyou to Anton Paar and the British Society of Rheology for sponsoring the meeting.

Steve Goodyer
Anton Paar Ltd.

BSR 2011 Midwinter Meeting
Complex Flows of Complex Fluids
December 19-20, 2011
University College London

The 2011 BSR Midwinter Meeting aims to provide an overview of the current research across the whole spectrum of complex fluids in complex flow situations - encompassing theory, simulations and experiments.

Confirmed keynote speakers include:

- * Prof. Malcolm Mackley (University of Cambridge)
- * Prof. Dr. Christian Wagner (Saarland University)

Contributions for oral and poster presentations are invited. For more information, please see the BSR website

<http://bsr.org.uk/meetings.asp>

or contact the organisers:

Dr Oliver Harlen
O.G.Harlen@leeds.ac.uk

Dr Helen Wilson
Helen.Wilson@ucl.ac.uk

UK Colloids 2011:
An International Colloid and Surface Science Symposium
July 4-6, 2011
De Vere Venue, Canary Wharf, London
<http://www.ukcolloids2011.com/>

This new colloid science conference will be held in London from July 4th to 6th 2011. It is being jointly organized by the RSC Colloid and Interface Science Group and the SCI Colloid and Surface Science Group and will provide a perfect opportunity for UK and international researchers interested in colloids and interfaces to meet, present and discuss issues related to current developments in this field.

The Venue

The conference will be held at the De Vere Venue, Canary Wharf, London. This purpose built conference centre will provide a perfect venue for delegates to meet and discuss their work. Canary Wharf is the centre of London's business district and many bars and restaurants are readily available within the vicinity of the conference venue.

Meeting Themes

- Manufacture of Colloidal Systems
- Characterisation of Colloids & Complex Fluids
- Applications of Colloidal systems
- Polymer Colloids Forum • Nanoparticles
- General Papers

Plenary Speakers

Steve Armes, University of Sheffield, UK

Colin Bain, University of Durham UK

Jennifer Lewis, University of Illinois, USA

Robert Prud'homme, Princeton University, USA

Fees

	Early Bird	Late fee after 2nd May 2011
RSC/SCI Member	£450.00	£495.00
RSC/SCI Non-Member	£500.00	£550.00
RSC/SCI Student Member	£250.00	£275.00
RSC/SCI Student Non-member	£300.00	£330.00
RSC/SCI Retired Member	£225.00	£247.50

Organising Committee

Simon Biggs (Chair)

Peter Dowding (Treasurer)

Alex Routh (Secretary)

Cecile Dreiss (Social Events)

Simon Lawson (Exhibition and Sponsorship)

Deborah Reed-Aspley (Conference Secretariat)

INDUSTRY NEWS

Anton Paar

Anton Paar Sets Up New Centre for Instrumental Analytics in Graz

Anton Paar GmbH has set up a new centre for instrumental analytics in Graz, Austria. In addition to current activities of the Anton Paar group, products in the fields of Particle Characterization, Lab Automation, Optical Analysis as well as Soft Solids Characterization will be developed. 30 million Euro will be invested medium-term and 200 new high-qualification jobs will be created. In a first step, in the beginning of 2011, complete project teams for product and application development will be hired. This investment is part of a strategic initiative to expand the present product portfolio for laboratory analytical technologies.

TA Instruments Ltd

TA Instruments Introduce the RSA-G2, mechanical analyser of solids

The new RSA- G2 is the most advanced platform for mechanical analysis of solids from the world's leading supplier of DMA instrumentation. This new high- performance instrument represents the fourth generation of dual head mechanical analyzers, featuring a new force convection oven for precise and accurate temperature control, extensive array of geometries to accommodate the widest range of sample shapes and stiffness and immersion testing capability. The separate motor and transducer technology of the RSA- G2 insures the purest mechanical data through independent control of deformation and measurement of the stress. Unrivalled accuracy, flexibility, and ease- of- use are realized through improved specification, a new environmental system, expanded test modes, and new intuitive TRIOS Software. In addition, the RSA- G2 doubles as a Dielectric Analyzer, DETA, for stand- alone or simultaneous measurements More details can be found about this and many others of our products on our website: www.tainstruments.com

TA Instruments UK Basic Rheology Courses

TA are pleased to announce the continuation of our series of basic rheology courses throughout 2011. This course is designed for the user to get a maximum out of their rheometer with a mixture between theory and hands-on practice. Please note to ensure that delegates get the most out of the practical element of the course, places are limited. For more details please contact Olivia Gibson for further information ogibson@tainstruments.com

Course dates are:

23rd -24th June: Basic Rheology Course, held at TA Instruments, Crawley

20th-21st October Basic Rheology Course, held at TA Instruments, Crawley

TA Instruments successful UK Polymer Characterisation Seminar

RBS Williams F1 Conference Centre, Oxfordshire

The recent polymer seminar held late last year was a great success and TA Instruments would like to thank all of those customers who attended. The meeting took place at the RBS Williams F1 Conference centre, Grove, Oxfordshire and was so very well attended that we had to increase the capacity due to demand.. A vast array of presentations, from a variety of invited guest speakers discussed the use of TA Instruments' analytical techniques in the characterisation of materials in the thermosetting and thermoplastic industries. Along with a full day of presentations perhaps another highlight was a tour of the Williams F1 Grand Prix Collection.



CONFERENCE DIARY

2011

CONFERENCES & MEETINGS

18-20 April **Non-Newtonian Fluid Mechanics – Progress and Challenges**
Gwynedd Prof. Ken Walters (kew@aber.ac.uk) or
UK Prof. Peter Townsend (P.Townsend@swansea.ac.uk)

10-14 May AERC 2011 – 7th Annual European Rheology Conference
Suzdal Prof Valery Kulichikhin
Russia <http://www.rheology-esr.org/AERC/2011>

10-14 May **PPS-27 The Polymer Processing Society 27th Annual Meeting**
Marrakesh Prof M. Bousmina
Morocco Conference Website: <http://www.pps-27.com> or www.pps-27.ma

18-22 June **ESHCM 2011 - 16th International Congress of the European Society**
Munich for Clinical Hemorheology and Microcirculation; 14th International
Germany Congress of Biorheology; 7th International Conference on Clinical
Hemorheology; <http://www.3sm-2011.com>

4-6 July **UK Colloids 2011: An International Colloid and Surface Science**
London **Symposium**
UK <http://www.ukcolloids2011.com/>

9-13 Oct **83rd Annual Meeting of The Society of Rheology**
Cleveland Organiser: The Society of Rheology
Ohio, USA <http://www.rheology.org>

2011

COURSES & WORKSHOPS

17-20 May **PROCESS RHEOLOGY:** For further information, contact
Glasgow Dr N E Hudson, Dept of Pure & Applied Chemistry,
Scotland University of Strathclyde, 295 Cathedral Street, Glasgow G1 1XL.
Tel: +44 141 5482162; Fax: +44 141 5484822;
e-mail: n.e.hudson@strath.ac.uk

23-24 June **Basic Rheology Course**
Crawley For further information, contact Olivia Gibson; TA Instruments,
UK Fleming Centre, Fleming Way, Manor Royal, Crawley, West Sussex,
RH10 9NB; T: +44 1293 658900; F: +44 1293 658901; e-mail:
Olivia.gibson@taeurope.co.uk

13-14 July
Nottingham
UK

Rheology Workshop

Steve Goodyer, Anton Paar 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

20-21 Oct
Crawley
UK

Basic Rheology Course

For further information, contact Olivia Gibson; TA Instruments,
Fleming Centre, Fleming Way, Manor Royal, Crawley, West Sussex,
RH10 9NB; T: +44 1293 658900; F: +44 1293 658901; e-mail:
Olivia.gibson@taeurope.co.uk

23-24 Nov
Bradford
UK

Rheology Workshop

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