
THE BRITISH SOCIETY OF RHEOLOGY



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EDITORIAL

I hope that you all had a Happy & Safe Millennium. The celebrations in London, Paris, and other major cities around the world were awe-inspiring. It certainly advertised the science of pyrotechnics spectacularly. Now, how about ideas for rheological demonstrations on the same scale...

This edition of the *Bulletin* again says "Welcome" to our colleagues in the member societies of the ESR. The *Bulletin* aims to be as topical as possible. Deadlines are, however, as ephemeral as fireworks, so, as always, you are courteously reminded to check the BSR / ESR web pages at <http://www.ncl.ac.uk/rheology/conferences/index.html> for details of conferences that are coming up soon.

This edition includes details of the (now fully opened) Scott Blair Reading Room at UCW Aberystwyth, and Prof. Howard Barnes has written an eloquent study of the "patriarch of British rheology". This issue also includes the address given at the awarding of the BSR Annual Award to R C Ball and J R Melrose.

I hope that you enjoy the *Bulletin*. If you would like to comment, or submit an article, please contact me.

Until next time...

Paul Doody

SUBMISSIONS TO THE BULLETIN

Submissions to the Bulletin may be made by any practical means – post, email, disk, fax, pigeon, donkey, *et cetera* but electronically is preferred (saves typing...). Most packages supported (Word, WordPerfect, ASCII, RTF, PDF) but always provide a contact name, address, eMail, or telephone number in case of problems.

Copy date for next (European) Bulletin is 15 April 2000. Copy date for next British edition is 15 August 2000. Please add these dates to your diaries! By the way, the intention (if not always the act...) is to publish in February, June, and October and, as always, all contributions gratefully received.



Late copy can sometimes be accommodated however the facilities of the BSR and ESR web sites may also be appropriate. Please contact Editor for details.

COVER ILLUSTRATIONS

I'd like to remind everyone that suggestions for Black & White or colour pictures (preferably of a rheological nature!) are welcomed by myself (Bulletin Editor) or Nick Hudson (Abstracts Editor). Suggestions are always welcome!

LETTERS

A letter from Jack Roberts regarding the recently published “*Rheology Series 7, An Historical Perspective*” by Tanner & Walters

I read with much interest *Rheology Series 7, An Historical Perspective* by Tanner & Walters. It brought back many memories of Weissenberg, and many other consultants, and their work for the Petroleum Warfare Department and in particular that for the PWRS at Langhurst. There are, however, a number of points, which you may consider interesting on work for PWRS.

Ref. P 161

1. The original observance of the “Weissenberg effects” was due to research at Langhurst on rubber gels not aluminium soap ‘thickeners’.

Before the advent of thickened fuels, various methods of increasing the range and effectiveness of Flame Throwers were proposed, as purely viscous liquids had either large pressure losses in delivering fuel to the nozzle or broke up into small droplets. All the practical ones centred on giving ‘structure’ to the fuel. For example, G I Taylor suggested a cotton wool filling with petrol as a base fluid, L V Thomas suggested a myriad of tiny coiled springs and I suggested a rubber solution. Whilst the last gave an increase in range it was not comparable to G I Taylor’s fuel.

Dr D H Hall and I noticed the rod climbing effect immediately and later further work by Hall gave a greatly improved F T performance and a large rod-climbing phenomenon. A rough assessment of quality was how high the fuel climbed a rod and the viscosity under small rates of shear. (P 95-67 Flame over Britain). This effect was considered to be dependant on the fact that in simple shear and in simple elongation the fuel acted in an elastic manner with a tension along the lines of flow, easily demonstrated by clean cut off of the jet on closing the ejection valve, by the method of delivering a set amount of liquid for testing by cutting the flow from a can with a pair of scissors and tilting back the can and by the jet expansion and break up. This work was carried out well before Christmas 1941, when the rubber was in great demand owing to Japanese invasion of E. Asia. After this, much effort was devoted to thickened fuels.

2. Thus the main contenders would not have been Imperial College or Birmingham but Langhurst (PWRS). However, Garner, Nissan and Wood would have noticed the effect in thickened fuels before Imperial College.

3. E K Rideal was shown the effect at PWRS in 1941. I agree with Dr Nissan but Pryce-Jones did not mention the effect to me.

Whilst I can find no record, it seems to me that the ‘Weissenberg effect’ would probably have been noticed by previous workers in the Rubber Industry (Dunlop, Goodyear, Firestone *et al*) but was first noticed at Langhurst in matters concerning Flame Warfare.

That some liquids could show elastic recoil effects was known before 1940 (First Report on Viscosity & Plasticity 2nd Edit 1938, P 101) and the work of A S C Lawrence (J Roy Microscope Soc. (1938) 58, 30) who made no remark on rod climbing.

With kind regards,
Yours sincerely

Jack Roberts

BSR NEWS

BSR ANNUAL AWARD 1999 / 2000 Robin C Ball and John R Melrose

The BSR Annual Award for 1999 is made to R C Ball and J R Melrose jointly in recognition of the exceptional insights into the nature of flow in concentrated suspensions that have resulted from the computer simulations they have carried over the last five years or so.



The 1999 Annual Award Winners, Professor Robin C Ball (left) and Dr John R Melrose (right), receiving their certificates from the BSR President, Dr Richard Buscall, at the University of Wales, Aberystwyth, 15th December, 1999.

Ball and Melrose and co-workers have used the methods of Stokesian dynamics and Brownian dynamics to explore a number of key questions in suspension rheology, adapting the methods in ingenious ways where necessary in order to obtain the accuracy necessary to obtain unequivocal results.

For those members in remote fields who do not know, the simulation of flowing suspensions is a highly non-trivial business, even for monodisperse spheres because of the co-operative and long-range nature of the hydrodynamic interactions. These have to be approximated and rendered pairwise additive in some way without throwing the baby out with the bath water. Ball and Melrose adopted what has now become the conventional way of dealing with this problem,

which is to use an effective background viscosity far-field and lubrication forces between nearest neighbours close up, but they studied very carefully how best this should be done.

An important problem they considered was the flow of hard-spheres at infinite Peclet number (Pe), *i.e.* non-Brownian hard-spheres. Again, for anybody who might not know, the hard-sphere suspension (HSS) is a paradigm in suspension rheology and much effort has been put into calculating its properties and into measuring the rheology of real suspensions thought to approximate to hard spheres. Ball and Melrose found that the HSS is actually a false paradigm since it shows pathological behaviour. In the simulated shear flow the particles jammed and the stress diverged at any shear rate. In other words, they saw catastrophic shear thickening or "dilatancy" no matter how slow the flow. The explanation of this was very simple - there was nothing to keep the particles apart and so the lubrication forces diverge as colliding particles come into contact and the particles become pinned. This singular behaviour had not manifested itself in earlier simulations because the time steps and distance steps were too large, and the hard-core potentials too soft, allowing some particle overlap. It was soon realised from their own work and the earlier simulations of Brady *et al.* that one way to eliminate the pathological behaviour of HSS was to include momentum fluctuations in the solvent, *i.e.* Brownian motion. As argued by Brady, Brownian motion establishes a minimum, typical distance of closest approach between pairs of particles, which is inversely proportional to the shear-rate. The system still shear-thickens, but only weakly and only above a critical shear-rate. The cause and nature of shear thickening has been a matter of long debate in the rheological literature. The simulations of Brownian and non-Brownian hard spheres did much to clarify the basic mechanism of shear thickening. Ball and Melrose next examined the effect of dressing the particles in a permeable, elastic coat. Adsorbed, solvated polymers have long been used to stabilise colloidal dispersions and it is well-known that the nature of the coat affects the low-shear viscosity and the rate of shear thinning, but to account for these features one needs only to consider the conservative forces between coats. If shear thickening equates to a loss of lubrication then the permeability of the coat becomes important also. Recently, Silbert, Ball and Melrose have reported some simulations of concentrated flocculated dispersions also. Flocculated dispersions will undergo homogeneous shear flow provided that the attractive well-depth is not too large, but slip and fracture become increasingly important as the flocculation gets stronger. Ball and Melrose are considering how to perform simulations on a scale that will allow these features to develop.

Another "big" problem they are addressing is how to simulate a suspension in a viscoelastic fluid. They have used the Lagrangian, co-deforming, Voronoi mesh method of Yuan, Ball, and Edwards to discretise both the fluid and the spherical particles. This means that the particles are present as polyhedra, but in order to get the lubrication forces between close neighbours right one has to compensate somehow for the errors that the tessellation introduces. Ball developed a very ingenious solution to this problem - Melroses' equally demanding task was to write the code and mesh the initial configuration. As far as I am aware, no results have been published yet, but they are awaited with interest.

Ball and Melrose's work is full of insight, ingenuity and wit and if you want to find out why suspensions have the rheology they do, reading their papers will provide a lot of answers.

Some publications by J. R. Melrose and R. C. Ball on concentrated colloids:

1. Lubrication breakdown in hydrodynamic simulations of concentrated colloids, **Adv. in Coll. and Int. Sci.** 59 19 (1995)
2. The pathological behaviour of sheared hard spheres with hydrodynamic interactions, **Europhys Lett.** 32 535 (1995)
3. Simulations of electrorheological fluids with hydrodynamic lubrication (with S Itoh), **Int. J. of Mod. Phys. B** 10 3211

4. Continuous shear thickening and colloid surfaces (with J H van Vliet), **Phys. Rev. Lett.** 77 4660 (1996)
5. Kinetic theory of jamming in hard sphere start-up flows (with R Farr), **Phys. Rev. E** 55 7203 (1997)
6. Colloidal microdynamics: Pair-drag simulations of model-concentrated aggregated systems (with L E Silbert), **Phys. Rev E** 56 7067 (1997)
7. A simulation technique for many spheres in quasi-static motion under frame invariant pair drag and Brownian forces - **Physica A** 247 444 (1997)
8. A structural analysis of concentrated colloids under flow (with L E Silbert), **Mol. Phys.** 96 1667 (1999)
9. The rheology and microstructure of concentrated aggregated colloids (with L E Silbert), **J. Rheol.** 43 673 (1999)
10. Stress distributions in flowing aggregated colloidal suspensions (with L E Silbert and R Farr), **J. Chem. Phys.** 111 10 (1999)
11. Shear thickening and order-disorder effects in concentrated colloids at high shear rates (with A Cathall), **J. Rheol.** (1999 – in press)

Richard Buscall
BSR President

COMMENTARY ON THE 298TH COUNCIL MEETING

The 298th Council Meeting took place in the Conrah Hotel a few miles south of Aberystwyth on a cold but sunny December morning. The previous day had seen the official opening of the Scott Blair collection and the presentation of the Society's Annual Award to Robin Ball and John Melrose. After a hearty breakfast we got down to business. Only Geoff Brownsey gave his apologies and with future president Eirian Jones in attendance there wasn't much space around the table.

This was my first council meeting, so I wasn't quite sure what to expect. However, any thoughts I might have had of being able to sit back and relax were quickly dispelled when I was delegated to write this commentary. Malcolm Mackley was elected Chairman (a position similar to that of the US Vice-President, in that he has nothing to do unless the President falls under a bus).

Dick Whorlow's widow had very kindly left the Society twenty-four copies of her late husband's book, "Rheological Techniques". After a brief discussion we agreed to distribute half to rheology groups in UK universities and half to rheological societies in poorer countries such as Eastern Europe, where textbooks are in very short supply.

Tom Dovey presented a report on membership following the change in the method of collecting subscriptions. So far about one third of existing members had replied to the invoice for subscriptions for 1999/2000. The two-thirds yet to reply included some members of Council, who remained nameless! Tom has been very busy updating the membership list. There were thirteen new applications for membership, which were all approved.

Paul Doody apologised for the recent non-appearance of Rheology Bulletin, but reported that volume 42 (2) was now in press and volume 42 (3) would go to press in March 2000.

Christmas came early for Council members as Nick Hudson gave us all copies of a trial version of Rheology Abstracts on CDROM to test. The final version will contain the entire set of Rheology Abstracts right back to volume one, and all being well, it should go on sale in the first half of the year 2000 at a cost to members of around £30 + p&p. The search facilities on the CDROM should prove very useful, and as a bonus, the CD-ROM will also contain a rheology font containing all those useful rheological symbols, such as η and γ that we all need from time to time.

After coffee David Binding reported on the organisation of the Rheology 2000 meeting in Cambridge. Interest in the meeting is very high with around 700 abstracts having been received. Some tough choices will be required to cut down this number to fit the space available in the programme. David showed us a plan of the site and an outline of the scientific programme. With the scientific part of the meeting under control, much of the discussion centred on food, accommodation and entertainment, where Cambridge college rivalries were on display.

Other possible future conferences were discussed with the aim of having two meetings per year in future. These may include a joint meeting with the Spanish Rheology in Spain, and a joint meeting with the Mineralogical Society.

The web page sub-committee were asked to investigate acquiring a more memorable URL for the Society's web page, such as rheology.org or bsr.org (though sadly both of these have been bagged already by other organisations).

By now the meeting had already overshot its target finish time of 12.30, and after agreeing the locations and dates of the next two Council meetings we grabbed a sandwich before going on our separate ways.

Oliver Harlan

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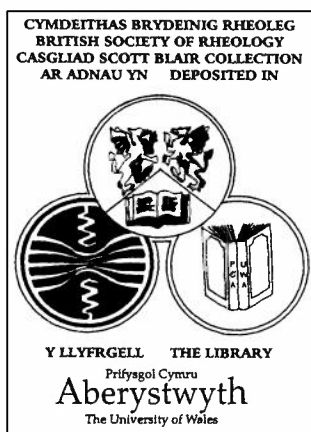
THE SCOTT BLAIR COLLECTION

OFFICIAL OPENING BY SIR SAM EDWARDS, FRS

The University of Wales Aberystwyth

15 December 1999

The Scott Blair Collection of books, pamphlets, journals and reprints is housed in room 410 adjacent to the Physical Sciences Library on the fourth floor of the Physical Sciences Building, University of Wales, Aberystwyth.



The bookplate that appears in all items deposited in the collection.

The books and research papers of Scott Blair were donated to the British Society of Rheology and later deposited in the Library of the University of Wales, Aberystwyth in the early 1980's. After the death of his widow in 1988 a legacy of £10,000 was bequeathed to the Society "for the purposes of maintaining and improving the library facilities enjoyed by the Society in connection with the research papers..."

The collection has over 550 books and the aim is to develop this "into an up-to-date library of rheological literature available to all members". Included in the collection are some of Scott Blair's publications such as *Agricultural rheology*, *An introduction to industrial rheology*, *Measurements of mind and matter*, *Elementary rheology* and *Rheology in relation to pharmacy and medicine*. Some of these books are extensively annotated by the author. *Rheology abstracts* and the *British Society of Rheology Bulletin* are two journals published by the Society which form an important part of the Collection. There is a manual index to the Reprint Collection whilst the books and journals are catalogued online. Access is via <http://voyager.aber.ac.uk>.

The official Custodian of the Collection is Professor Ken Walter FRS, Mathematics Department, University of Wales, Aberystwyth, e-mail: kew@aber.ac.uk. Management of the Collection is undertaken by Mrs Tegwen Meredith, Physical Sciences Library, who is pleased to receive general enquiries, e-mail: mzm@aber.ac.uk, tel: 01970 622407.



In the room containing the Scott Blair Collection, which was opened by Sir Sam Edwards (left) on 15th December 1999, we see a “continuum” of Past (& Present) Presidents of the BSR. Readers will recognise Ken Walters, Ralph Oliver, Mervyn Jones, Richard Buscall, and John Hutton.



One of the first “clients” of the Collection, in its new home, is the Editor of Rheology Abstracts, Dr Nick Hudson. Perhaps the article he is reading will appear in the next issue? Nick is sitting in the chair purchased from a grant giving by long time member of the BSR, Mr Jack Deer.

GEORGE WILLIAM SCOTT BLAIR MA PhD DSc FRIC FlntP
(1902-1987)—‘THE MAN AND HIS WORK’



by

*Prof. Howard A. Barnes, OBE, DSc, FREng,
Unilever Research, Port Sunlight, CH63 3JW.*

*A talk given on the occasion of the opening of the Scott Blair reading
room at the University of Wales Aberystwyth, Dec. 15th 1999.*

Introduction

This event stirs up very special memories for me: first, I was an undergraduate student here in the Physics department in the 1960's, and secondly, during that time I undertook a holiday job at the National Institute for Research in Dairying (otherwise known as NIRD -pronounced 'nerd', but without the modern connotations!). The Institute was an outpost of Reading University, and the head of the Physics department there was a certain Dr Scott Blair. My job was to help develop a blood viscometer with Dr Hywel Thomas an old student of the Aberystwyth physics department - funding was from the National Institute of Health in the USA. See the outcome in Thomas, H W; Janes, D E; Barnes, H A, '*A probe capillary viscometer*', J. Sci. Instrum., 2(8), 834-8 (1968).

While I was there, many distinguished Rheology visitors passed through the little laboratory where I worked, on their way to Scott Blair's office. Among them were McHenry of concrete-creep fame; Markus Reiner, one of **the** original rheologists, and Al Copley the eminent bio-rheologist. When I left, Scott Blair's parting words were 'I hope you've caught the Rheology bug'.

When I returned to Aberystwyth, I did indeed continue an interest in Rheology, choosing for my undergraduate project the design and construction of a gelometer, trying to build an electronic version - based on valves of course - of the mechanical one I had seen used by Scott Blair and his colleague Burnett. I eventually joined Ken Walters' research group in Applied Mathematics and thereby started to move out into wider Rheology circles. It was then that I met Scott Blair again, this time at Rheology conferences - the Royal Military College of Science at Shrivenham

particularly comes to mind, with its batmen and early-morning cups of tea! It was obvious that Scott Blair was not completely comfortable at those meetings which were generally taken up with non-linear viscoelasticity, mathematical description of phenomena, constitutive equations, computing, etc, which were not areas of particular interest to him. However, these were the 'bread and butter' of life in Aberystwyth, so I could at least follow the arguments. Consequently, to me, Scott Blair seemed to be very much the last of the old school of British rheologists.

On leaving Aberystwyth, I found myself following in Scott Blair's footsteps into a career in industrial Rheology (also with a later interest in Biorheology in connection with the BBSRC, via a personal interest in food Rheology and processing). I have also, like him, been president of the British Society of Rheology (BSR), and we have both, in our own ways, tried to pass on an understanding of our subject by writing books for learners. After 30 years working on industrial rheology problems, I now feel a great deal of empathy with Scott Blair who was also struggling with industry's big problems, that is, with real materials that one **had** to look study, not just working on model systems of one's own making and to one's own liking. To many rheologists, George Scott Blair was given to flights of fancy into psycho-Rheology, fractional differentiation, etc. However, I think these were his honest attempts to try to explain real materials in real situations, which we still struggle with today.

History

Younger rheologists might ask 'who was this man, Scott Blair, anyway?'. George William Scott Blair was for most of us the quintessential - *if eccentric* - Englishman, but actually, like the Blair of current fame (the British prime-minister), he had Scottish parents. He was born in Weybridge in Surrey in 1902; went to Charterhouse, the famous public school, and then on to Trinity College Oxford in 1920, where he studied Chemistry, with Prof. Sir Cyril Hinshelwood as his tutor. He carried out a one-year research project in colloid chemistry to complete his honours degree, and thereafter found employment for a few years as a colloid chemist with a Manchester firm of Henry Simon. Whilst there he worked on the viscometry of flour suspensions, publishing his first rheology paper in 1927.

He worked next at the government-funded Rothamsted Experimental Station (as it then was) until 1937, studying the flow properties of soils and clays. However, in 1929 came the opportunity to take up a Rockefeller Fellowship at Cornell University in Ithica, New York state. He worked there on the flow of potter's clay and developed a means of measuring its plasticity. It was during that year that he attended, and indeed chaired, the inaugural meeting of the Society of Rheology in December 1929 in Washington DC—exactly seventy years ago to this very month, and he was only 27 years old! He met all the pioneers of Rheology—Eugene Bingham and Markus Reiner among them, and many became his life-time friends.

After returning to Rothamsted he worked on honey and flour doughs as well on as soils and clays. In 1936 he submitted his Ph.D. thesis to the University of London, and it was examined by Prof. Freundlich, the distinguished German colloid chemist who was working on thixotropy. The same institution later awarded him a D.Sc. for his labours in rheology (probably the first ever rheology D.Sc.)

In 1937 he joined NIRD as head of Chemistry but soon took over the newly formed Physics department and remained in that position until his retirement thirty years later. His own work during that time was on such materials as cheese and butter, but during the war years he became involved in research on plastics, and also moved into the area of what we now know as Biorheology, looking at various mentionable and unmentionable body fluids of cows and then humans. We can summarise what he found, by saying that he was the first person in the world to use a rheometer as a means of birth-control!

Scott Blair had been asked by Eugene Bingham to start a British branch of the Society of Rheology, but this was not taken up. However, during the war, interest in Rheology in the UK grew to a point where some organisation was thought necessary, and Sir Geoffrey Taylor FRS chaired a meeting at Reading for that purpose, with both industrialists and academics in attendance – Scott Blair and Dr F G W Harrison of Farnborough being the main driving force. Out of this came the British Rheologists Club in 1940, with Sir Geoffrey Taylor FRS as president and Scott Blair as secretary. The thinking was that during wartime, forming a British *Society* of Rheology would be—in Scott Blair’s own words—‘pompous’. However, after much discussion, the club became the BSR in 1950.

Scott Blair was president of the Society from 1949 to 1951, and was awarded its Founders gold medal in 1970. He was similarly honoured by the German Society of Rheology with the Herbert Freundlich Medal, which—since of course Freundlich had been his PhD examiner—gave him a great deal of pleasure to receive. To complete our discussion of his association with the BSR, we note that annual scholarships in Rheology and Biorheology are awarded in his name by the society. Scott Blair took part in the organisation of the First International Congress on Rheology at Scheveningen, Holland, in 1948, and significantly it was there that he met Al Copley for the first time. Then, he was secretary of the Second International Congress, which was held in his alma mater, Oxford University, in 1953.

In the late 1950’s, Scott Blair came again into contact with Al Copley, and together they pioneered the area of Biorheology, and later Hemorheology. (They even have a phenomenon named after them—a wall effect in blood flow in small capillaries.) They organised the first-ever conference wholly devoted to blood flow: it was held in 1958 at the Charing Cross Hospital in London, where Copley was Director of Vascular Diseases. They then became joint Editors-in-chief of a new international journal called *Biorheology*, with its first issue being published in 1962. Much of Scott Blair’s efforts hereafter went into this area, and also into the International Society of Biorheology that was subsequently formed in 1966. The second International Conference on Biorheology was held in 1969 at Heidelberg in Germany, at which Scott Blair was presented with that Society’s Poiseuille Gold Medal. (The sixth conference was held in 1986, the year before his death.) Because of pressure of work, Scott Blair had to turn down the opportunity to become the founder editor of the *Journal of Texture Studies*—another subject near to his heart—but he was nevertheless on its editorial board for many years.

Scott Blair combined work on blood flow with his dairy interests, so for instance, in 1965 he published a paper on ‘*An equation to describe the rate of settling in blood and milk*’. A lot of work was also carried out on blood coagulation with his colleague Burnett, using a U-tube gelometer as first developed by Saunders and Ward. His interest in blood continued past his retirement from NIRD in 1967—at the full age of 65—and he worked part-time at the Oxford Haemophilia Centre in the Churchill Hospital, supported by the British Heart Foundation. Sadly, during most of his retirement he suffered from failing eyesight and eventually became blind. He died peacefully in his sleep, at home, at Grist Cottage, Iffley, Oxfordshire in 1987, in his eighty-sixth year.

He was a true polymath in spirit, with a great interest in the English language, especially its scientific terminology, and in this connection he was Chairman of the British Standards Institute Committee on Rheological Nomenclature. He was also interested in other languages as they were needed to communicate effectively with fellow scientists before the days of ubiquitous English, so he spoke French, Dutch, German, Hebrew, Russian, Spanish, and he even rose to Icelandic when chairing the first international conference on Biorheology in Reykjavik.

Author

Apart from writing nearly 250 scientific papers (he published his first paper at the very early age of 23, '*Periodic precipitation in dilute gelatin gels*', Phil. Mag. 49, 90-6 (1925)), Scott Blair was responsible for 7 books as author, co-author or editor:

- '*An introduction to industrial Rheology*', P. Blakiston, Philadelphia, 1938, (German edition, trans. Kauffmann, H., Steinkopff, Dresden & Leipzig, 1940).
- '*A survey of general and applied Rheology*', London, Pitman & Sons, 1944, 2nd edn. 1949.
- '*Foodstuffs: Their Plasticity, Fluidity & Consistency*', GWSB as editor, Elsevier, Amsterdam, 1953.
- '*Measurements of mind and matter*', Philosophical Library, New York, 1956.
- '*Agricultural Rheology*', joint author with Markus Reiner, Routledge & Paul, London, 1957.
- '*Elementary Rheology*', Academic Press, London & New York, 1969.
- '*An introduction to Biorheology*', Elsevier Scientific Publ. Co., Amsterdam; New York, 1974.

Scott Blair's books are always good sources of Rheology history. No book of his was ever written in a detached manner: they were about the work of people whom he knew and had talked with or written to, and his books are full of personal asides and reminiscences. He was not afraid to say that he did not understand things, and he happily referred the reader back to original sources. Unfortunately, some of his books are very difficult for a modern reader to follow, because he made little use of diagrams and the texts are very 'wordy' for today's busy reader. As well as being himself a prolific writer from an early age, Scott Blair was a great collector, as the collection in the reading room demonstrates.

Who still cites Scott Blair's work?

Over the last 25 years, Scott Blair's publications have - according to one large citation database - have been cited nearly 300 times in scientific journals. From a more careful analysis, it can be shown that 72 of his most popular papers were published in 32 different journals! Most of them where we might expect them, as see in his 'top ten',

	Journal in which papers were published	Period over which papers were published	Number of times cited in the last 25 years
1	J. Dairy Research	1938 – 1962	61
2	Rheologica Acta	1958 – 1973	28
3	Nature	1940 – 1959	26
4	Biorheology	1963 – 1982	20
5	J. Applied. Physics	1933 - 1960	10
6	J. Texture Studies	1970 – 1978	9
7	J. Physical Chemistry	1929 – 1938	9
8	Laboratory Practice	1957 - 1966	7
9	Adv. Food Research	1958 – 1963	7
10	Proc. Poy. Soc.	1939 – 1947	7

However, his catholic interests are shown in papers that are cited from journals such as

Brit. J. Psychol. (1940), Am. J. Psychol. (1942),

Brit. J. Philos. Sci.(1950), J. Physiol. (1942),

Biochemical Journal (1941), Neth. J. Agr. Sci. (1956),
Theor. Clin. Hemorheol. (1971), etc.

Two of his still-cited papers appeared in the prestigious Proceedings of the Royal Society, (1939 & 1947). During the last 25 years his books were cited as follows,

'Intro. to Biorheology '	(1974)	21 citations
'Elementary Rheology'	(1969)	17 ..
'Survey Gen. & Appl. Rheol. '	(1944, 1949)	9 ..
'Flow Props. ...Blood '	(1960)	3 ..
'Measurement Mind Mat...'	(1956)	3 ..
'Foodstuffs Their Plast...'	(1953)	1 ..

Conclusions

Like most scientists, Scott Blair's interests were strongly influenced by his circumstances. First, he spent most of his working life at the National Institute for Research in Dairying, and secondly he was happily married to Rita, a (child) psychologist. Add to this his interest in history, and you have the necessary ingredients for many of his later efforts in, for instance, the history of Rheology; in psycho-Rheology and in philosophy. Indeed, some have said of him that he was a frustrated psychologist, and more of an 'arts man' than a scientist, although in his wider professional life he was a Fellow of the Royal Institute of Chemistry and also of the Institute of Physics.

Scott Blair's name had begun to disappear from the general rheological literature by the 1970's, and he rarely features today in the reference lists or bibliographies of works on main-stream Rheology, e.g. Macosko, Larson, Benbow & Bridgwater, and even Steffe on Food Processing. Neither the Rheology of what he called high polymers, which dominates the stage nowadays, nor the highly mathematical approach so often used currently, were of great interest to him. However, he has rightly been accorded a prominent place in the Rheology 'hall of fame' drawn up by Tanner and Walters, in their '*Rheology: an Historical Perspective*' published last year by Elsevier. For this reason, the Scott Blair reading room with its unique collection of books and manuscripts, generously supplemented since the original gift of his personal collection, mostly by gifts from society members, should be of great use to people who want to build on a firm foundation in the subject.

Lastly we note that all the areas that were of interest to Scott Blair are still 'hot topics' today, such as

- Dispersion Rheology (at last given the prominence it deserves);
- Soft Solids (the name of a recent EPSRC initiative that I chaired);
- Bio-Rheology (a blooming area, with a thriving society and journal) and
- Industrial Rheology (the EFCE and IChemE have groups).

Scott Blair was indeed a man whose memory as **the** patriarch of British Rheology is worth honouring, and surely, there is no better way of doing so than by naming this attractive reading room after him.

Epilogue: Rheology and the University of Wales

Before we finish today, it is worthwhile spending a few moments considering the place of the University of Wales in the field of Rheology and thus to explain why the Scott Blair collection is here in Aberystwyth.

Rheology has been studied at the University of Wales for over 40 years, with the 1957 Annual Conference of the BSR having been held at the University College of Wales Swansea under the chairmanship of Prof. Jim Oldroyd. Three years later, Bill Wilkinson, then a lecturer in Chemical Engineering at Swansea, published his '*Non-Newtonian Fluids*' (Pergamon Press, London, 1960), while working under the leadership of Prof. Jack Richardson, who was also

busy with non-Newtonian flow and Chemical Engineering, and who is still publishing in the area today.

In many ways, Jim Oldroyd was responsible for the modernisation of the BSR, both during and after his presidency, and his influence becomes particularly noticeable in the 1957 proceedings. The old Rheologists' Club had now really become a modern Rheology society! One of Prof. Oldroyd's research students was Ken Walters, who after a spell in the USA following his PhD, came to Aberystwyth as a lecturer in Applied Mathematics in 1960. He progressed to senior lecturer, reader, and then to professor, being subsequently honoured with an FRS. His Rheology research group has for many years been by far the largest in the UK, with currently 22 staff and students. About 75 PhDs—as well as numerous MScs—have come from the group (around 50 PhDs were Ken's own) with three now being professors; two are readers and many more are current workers in the field of Rheology in academia and industry.

Dr Mervyn Jones of the Physics department in Aberystwyth was also very active in Rheology. In fact, it was while he was president of the BSR in 1985 that Scott Blair, due sadly to his failing eyesight, kindly donated his collection of books and papers to the Society. Dr Jones arranged with the college librarian, Mr Dieneman, for the collection to be housed in the Hugh Owen library under the care of Christine Ghosal. Mervyn was active subsequently in looking after and expanding the collection, eventually as chairman of the working party set up by the BSR council for that purpose in 1991.

The latest significant development in Rheology in the University has been the establishment of the Institute of Non-Newtonian Fluid Mechanics, bringing together groups from Aberystwyth, Swansea and Bangor to form a very successful synthesis of interests in pure and applied Rheology.

Apart from its (shall we say delightful?) geographical isolation, no other establishment could make such a strong claim to house the Scott Blair collection, especially now, since it has been given such an admirable home.

Dymunwn pob llwyddiant i'r casgliad unigryw yma, yn ei chartref bendigedig newidd, a gobeithiwn fe fydd o les i genhedloedd o rheolegwyr y dyfodol, ymhell i fewn i'r ganrif nesaf.

(For those unfamiliar with Welsh –

‘We wish every success to the establishment of this unique collection, in its splendid new home, and hope that it will benefit generations of future rheologists, far into the next century.’)

H A Barnes

www.rheology.co.uk

CONFERENCE REPORTS

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS 1999 ANNUAL MEETING

Dallas, Texas, 31 October – 5 November 1999



This was my first experience to present at an international symposium, which was held at the Wyndham Anatole Hotel, Dallas, Texas. The Wyndham is large (with at least six main entrances) and was ideal for this event, which was in fact one of the largest Annual Meetings in the Institutes history. There were at least 5000 participants and 3000 attendees in this meeting, which simultaneously covered a wide range of chemical engineering related topics: *materials engineering and sciences, fluid mechanics, separations, process development, food engineering, fluidization and fluid-particle systems, bioformatics, engineering sciences and fundamentals, particle technology, education, mixing/heat transfer and energy conversion, environmental; food, pharmaceutical and bioengineering; catalysis and reaction engineering, forest products/fuels and petrochemicals, interfacial phenomena, thermodynamics and transport properties, and management/liaison functions.* Apart from the technical and poster sessions, some highlights in the conference were the: *Fifty-First Institute lecture given by Prof. Morton M. Denn*, where he lectured about issues on slip; *50TH AIChE Career Fair, Student Conference, Social Program (to discover Dallas, home to the Cowboys);* and (of course) *the Welcoming Reception*, where we had a real 'ghoulish' Texan Halloween and I had the pleasure to meet H. Scott Fogler, Chair, Department of Chemical Engineering, University of Michigan author of "Elements of Chemical Reaction Engineering".

On the first day, I attended mainly the sessions on *Fundamental Research in Fluid Mechanics*. Some of the presentations were interesting, and I could still recall the chairman in style (wearing a Cowboy hat). In particular, I was eager to and finally met Gareth H. McKinley, Professor of Mechanical Engineering, MIT, who was one of the main co-ordinator in the Fluid Mechanics group of this conference. The next day I gave a talk in the Polymer Processing and Rheology II session within the Materials Engineering And Sciences group, on the topic *The Significance of Slip in Polymer Processing Using a Multi-pass Rheometer*. Among the audience were Robert A. Brown and Robert C. Armstrong, respectively Professor and Chair of Chemical Engineering, Massachusetts Institute of Technology (MIT), Cambridge MA. I had some stimulating discussions following the presentation. Most technical sessions started as early as eight-thirty (a.m.) and finished by six-thirty (p.m.), with a luxurious lunch break (mainly) at the Wyndham. We had choices of a few buffet kiosks, a seafood dine-in and an Italian corner (all at our own expense!). Anyway, I took this opportunity to make acquaintance with some people whom I do not meet otherwise.

Unlike most other conferences, this conference has published five different proceedings on only certain topics, which unfortunately does not include the Materials Engineering and Sciences. However, all the abstracts of the meeting were compiled in the form of a CD-ROM. Overall, I had a great time at the conference and some exciting moments at the West-End of Dallas. Indeed, I must acknowledged Prof. Malcolm R. Mackley, whose dedication I truly appreciated. Finally, I am most grateful to the British Society of Rheology for the contribution to some of the costs of my attendance at this conference.

Karen Lee

University of Cambridge, UK

BSR ANNOUNCEMENTS

11TH INTERNATIONAL CONFERENCE ON DEFORMATION, YIELD AND FRACTURE OF POLYMERS

10-13 April 2000

Churchill College, Cambridge, UK

Co-ordinated by the Polymer Industry Division of
The Institute of Materials,

in association with the Polymer Physics Group of
The Institute of Physics,

The British Society of Rheology,

& The Royal Society of Chemistry

and

organised by IOM Communications Ltd

The Churchill conferences on deformation, yield and fracture of polymers, held triennially since 1970, have established this event as the leading conference on its subject worldwide. The 2000 conference reviews the latest advances in: polymer fracture; polymer fatigue; deformation in crystalline polymers, amorphous polymers and special materials; molecular and micromechanical modelling and new experimental techniques.

Please contact, for more information:

Eleanor Tipton, Conferences and Events (C008), IOM Communications Ltd, 1 Carlton House Terrace, London SW1Y 5DB

T: +44 (0)207 451 7386

F: +44 (0)207 839 2289

E: Eleanor_Tipton@materials.org.uk

Info: www.materials.org.uk

XIII INTERNATIONAL CONGRESS ON RHEOLOGY

20-25th August, 2000

Cambridge, UK



Rheology 2000 is being organised by the British Society of Rheology on behalf of the European Society of Rheology. It will be held in the city of Cambridge, one of the most beautiful cities in the United Kingdom. The Congress will be located in the University of Cambridge and the Congress Office will be based at Robinson College.

The opening ceremony includes the award of the ESR Weissenberg Medal as well as the award of the BSR Gold Medal and the announcement of the recipient of the Society of Rheology Bingham Medal.

The scientific program comprises four plenary lectures, a number of keynote lectures, technical presentations and poster sessions. An equipment exhibition is also planned. The bulk of the scientific programme will take the form of a series of minisymposia. The programme is now being finalised. Over 300 papers have been accepted for oral, and nearly 400 for poster presentation. All fully paid delegates will receive the four volume Proceedings, whilst students will receive a CD-ROM.

Full social and accompanying persons programmes have been arranged. Details of these and extensive additional information, updated regularly, is to be found on the Congress Web site:

<http://abbey4.swan.ac.uk/rheology2000/>

The Rheological Aspects of Surfactant- Based Systems

ROYAL SOCIETY OF CHEMISTRY
Faraday Division – Colloid and Interface
Science Group

AND

BRITISH SOCIETY OF RHEOLOGY

Joint Research Conference Incorporating BSR AGM

18-19 September 2000 – University of Durham, UK

The conference is to address all rheological aspects of surfactant based systems, including those of emulsions, microemulsions, surfactant mesophases, interfacial rheology and influence of surfactant on rheological behavior of other solutions (e.g. polymeric solutions). Further offers of poster presentations, particularly from young research workers such as graduate students and post-doctoral assistants, are welcomed.

Accommodation will be on the campus of the University of Durham at Collingwood College. Those wishing to register should complete the attached registration form. A limited number of student bursaries is available through the Colloid and Interface Science Group and additional support from ICI plc. In all cases early booking is recommended.

A final programme, travel maps and details and acknowledgement of registration will be sent in August 2000.

PROVISIONAL PROGRAMME

Monday, 18th September

<i>From</i>	<i>Registration – Collingwood College</i>
10:00	
12:00	<i>Lunch</i>
14:00	Prof. S. J. Candau , Université Louis Pasteur, Strasbourg, FR Rheological properties of salt-free micellar solutions
14:30	Dr. P. D. Olmsted , University of Leeds, UK Metastability and Kinetics of shear -banding in wormlike micellar systems
15:00	Prof. H. Rehage , University of Essen, DE Quantitative description of the non-linear properties of dilute solutions of wormlike micelles
15:30	<i>Tea</i>
16:00	Prof. R. H. Colby , Pennsylvania State University, USA Rheology of polymer/surfactant aqueous mixtures
16:30	Prof. M. Gottlieb , Ben Gurion University, IL Rheological behaviour of a microemulsion/ABA copolymer system
17:00	Dr. D. Vlassopoulos , I.E.S.L., Crete, GR Structure and dynamics of micelles and supermolecular assemblies in solution and in the melt

17:30 **Poster session (Collingwood College)
& BSR AGM meeting**

19:30 *Dinner – Collingwood College*

Tuesday, 19th September

9:00	Prof. M. E. Cates , University of Edinburgh, UK Title to be announced
9:30	Dr. A. R. Rennie , King's College, University of London, UK Title to be announced
10:00	Prof. P. Luckham , Imperial College, University of London, UK The rheology of surfactants in non-aqueous media
10:30	<i>Coffee</i>
11:00	Prof. P. V. Coveney , QMW College, University of London, UK Theory, modelling and simulation of amphiphilic fluid dynamics
11:30	Prof. G.J.T. Tiddy , UMIST, UK The relationship between rheological measurements and structure realignment under shear in surfactant liquid crystals
12:00	Prof. C. M. Care , Sheffield Hallam University, UK Lattice Boltzmann models of flow in anisotropic fluids
12:30	<i>Lunch – Collingwood College</i>
14:00	Prof. G. G. Fuller , Stanford University, USA Rheology in Two Dimensions
14:30	Prof. R. W. Richards , Durham University, UK Surface Visco-elastic properties of amphiphilic polymers at the air-water interface
15:00	Dr. B. S. Murray , University of Leeds, UK Interfacial rheology of biopolymer films
15:30	<i>Tea and Departure</i>

ANNOUNCEMENTS

POLYMERS IN COLLOIDAL SYSTEMS

9 May 2000

SCI, 14/15 Belgrave Square
London SW1X 8PS

Polymers play a key role in the formation, stability and properties of colloidal suspensions in a wide range of industries. In this meeting, internationally recognised experts in the subject will present an overview of different aspects of the science controlling the interaction of polymers and colloids. In addition to details of the authors' latest research findings, the presentations will include an element of advanced teaching. The meeting is intended to be of interest to all colloid and polymer scientists. We hope that it will be particularly useful to those who are working in the area but have not had extensive academic training in this field. It would also be of use to Ph.D. students and Post-doctoral researchers working in this area.

Provisional Programme*

10:00-10:25		Coffee & registration
10:30-11:15	<i>Prof. Martien Cohen Stuart Wageningen</i>	Introduction and overview
11:15-12:00	<i>Prof. Terence Cosgrove Bristol University</i>	Adsorbed polymers
12:00-12:45	<i>Prof. Brian Vincent Bristol University</i>	Non-Adsorbed polymers
14:00-14:45	<i>Dr. Richard Buscall ICI</i>	Lunch
14:45-15:30	<i>Dr. Malcolm Faers Agrevo</i>	Rheology of colloid/polymer systems
16:00-16:45	<i>Prof. Eric Dickinson Leeds University</i>	Formulation
16:45-17:30	<i>Dr. Tharwat Tadros Consultant</i>	Tea
		Biopolymers (proteins and polysaccharides)
		Non-aqueous suspensions

* These are the general subject areas the speakers have agreed to cover, not the titles of the lectures.

Organisers:

Paul Luckham (Imperial College) and Andrew Howe (Kodak European R&D), on behalf of the Colloid and Surface Chemistry Group of the SCI.

For information on registration, please contact Deborah at the SCI Conference Office:

deborahnn@chemind.demon.co.uk

Tel: 020 7598 1563

Members	£95
Non-members	£140
Students/retired	£35

**FRC 2000 - COMPOSITES FOR THE MILLENNIUM
EIGHTH INTERNATIONAL CONFERENCE ON FIBRE REINFORCED
COMPOSITES**

*13th - 15th September 2000
University of Newcastle upon Tyne*

FIRST ANNOUNCEMENT and CALL FOR PAPERS

Use the online form at <http://www.ncl.ac.uk/~nccme/frc2000.htm> to register early!

The 2½ day FRC meetings, which occupy a unique place in the composites calendar, bring together the latest developments in all areas of composite materials engineering and serve as a forum for discussion. The series has proved invaluable to industry and to researchers wishing to stay abreast of the latest research and developments. In addition, those planning to enter the composites field have used FRC to gain a snapshot of the current state of the art. Several European and international organisations now send delegates on a regular basis.

FRC brings together key personnel from all sectors of the composites field, including end-users, manufacturers, designers, materials and equipment suppliers, as well of course as researchers and graduate trainees. The focused structure, which is a little different from many other large international conferences, is specially designed to promote interaction between the delegates on both formal and informal levels. This enhanced delegate interaction has proved in many cases to be almost as important as the formal content of the meeting.

The formal sessions will comprise well-prepared, refereed presentations by speakers from industry and academia, along with a poster session. These will be supported by formal published proceedings in a high quality bound volume (with ISBN, satisfying research assessment criteria for refereed conference publications).

Exhibition

An exhibition will complement the presentations and posters. Companies interested in participation should indicate this as soon as possible on the attached form. There will also be opportunities for companies to sponsor parts of the social programme.

Scope of the Conference

The organising committee now invites offers of papers and expressions of interest. Papers accepted for oral and poster presentation will receive equal emphasis in the proceedings. Submissions should be in the form of a one page abstract.

All topics relevant to the processing, properties and applications of fibre reinforced composites will be welcomed. Areas of particular interest include:

- New Materials Developments
- Improved Processing Science and Technology
- Expanding Areas of Application
- Critical Properties

Cost-effectiveness

The organisers are aware of the increasing costs of conference participation. Our aim, with FRC, is to provide a very well-organised, focused and cost-effective meeting that will meet the

needs of delegates from diverse backgrounds. The delegate fee will be competitive with other composites conferences.

Further Information

Presentations and papers should be in English and at least one author from each paper will be expected to attend the conference as a delegate. E-mail submission is welcomed using WORD for Windows.

Provisional Key Dates and Deadlines:

10 May 2000 Deadline for receipt of papers and author registration

10 June 2000 Deadline for Early Registration

Location

The University of Newcastle upon Tyne is situated in the centre of a vibrant and historic city in the North East of England with excellent air connections, including frequent connecting flights from London and Amsterdam. The city is three hours by rail from London. There are several places of interest within 2 hours by road or rail, including the historic cities of Edinburgh, Durham and York and areas of outstanding beauty including the Lake District, the North East Coast and Yorkshire. The conference organisers will be pleased to advise delegates on travel, tourism or activities for accompanying persons.

Contact for further information:

Louise Blackburn

Conference Organiser

Conference Design Consultants

Tel: +44-191-284-7590

Fax: +44-191-285-6993

ANNOUNCEMENTS OF THE EUROPEAN SOCIETY OF RHEOLOGY (ESR)

WEISSENBERG MEDAL

It is my great pleasure to inform you that the (second) Weissenberg Award of the European Society of Rheology (ESR) has been awarded to:

Dr. H.M. Laun, BASF AG

The award ceremony will take place at the XIIIth International Congress on Rheology, Cambridge, UK, 20-25th Aug 2000.

Manfred Wagner

RHEOLOGIE ET INNOVATION

23-25 October 2000

Grenoble, France

In autumn 2000 the 35th Annual General Meeting of the "Groupe Francais de Rheologie" (GFR) will be held in Grenoble from 23 to 25 October in concert with the Greek and Italian Societies of Rheology. Nadia EL KISSI (Laboratoire de Rheologie) is coordinating the organization.

The topic is "Rheologie et innovation" with three sets of themes privileged right now:

- Assessments and Challenges

- To give a progress report on the recent developments and to discuss the scientific stakes, in the field of rheology.

- New materials and techniques

- To cross the techniques of characterization, recent or diverted of their first destination, and new materials, to obtain remarkable advances

- Rheology and society

- To federate competences of the scientists working in different fields, since from health to environment, from car industry to cosmetics, every field of science and life is concerned.

The deadline for submitting abstracts is March 31, 2000. More information can be found on the conference website at the following address: <http://rheologie.ujf-grenoble.fr>

Additional inquiries can be obtained through gfr2000@ujf-grenoble.fr

5TH NEWSLETTER OF THE EUROPEAN SOCIETY OF RHEOLOGY

50TH CANADIAN CHEMICAL ENGINEERING CONFERENCE SYMPOSIUM ON RHEOLOGY

15-18 October 2000

Montreal, Canada

CALL FOR ABSTRACTS

The Canadian Rheology Group and the Groupe Francais de Rheologie are soliciting ABSTRACTS for presentation at the Symposium on Rheology organized within the 50th Canadian Chemical Engineering Conference to be held in Montreal, October 15-18, 2000. Sessions on Fundamental and Applied Rheology, Polymer Solutions, Polymer Blends and Composites, Emulsions, Suspensions, Instrumentation, Numerical Simulations etc. will be organised.

Abstracts, in English or French, should have a minimum of 200 and a maximum of 500 words and should include the title, the names of the authors and the authors affiliation(s). The abstracts should be submitted by e-mail to one of the symposium co-chairs. Other instructions will shortly be available on the website of the Conference (<http://csche2000.ca>).

Symposium co-chairs are

CANADA

Prof. Abdellatif Ait-Kadi
Departement de genie chimique
Universite Laval - Pav. Pouliot
Ste-Foy (Que.) - G1K 7P4 91160
aitkadi@gch.ulaval.ca

FRANCE

Jacques Bouton
RHEO s.a.
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CHAMPLAN
bouton@rheo.fr

Dr. Danielle Boils

Prof. Jean-Louis Chevalier

Member of Research Staff, ENSSPICAM

Materials Characterisation Universite d'Aix Marseille

Xerox Research Centre of Canada 13397 MARSEILLE Cedex 13

2660 Speakman Drive

bencini@spi-chim.u-3mrs.fr

Mississauga, Ont, L5K 2L1

daniele.boils-boissier@crt.xerox.com

Prof. Savvas G. Hatzikiriakos

Prof. Claude Wolff

Department of Chemical Engineering

Laboratoire Materiaux Macromoleculaires

The University of British Columbia CNAM - 292 rue Saint Martin

2216 Main Mall

75141 PARIS Cedex 03

Vancouver, BC, V6T 1Z4 wolff@cnam.fr

hatzikir@unixg.ubc.ca

The deadline for submitting abstracts is February 15, 2000. Acceptance of papers will be based on the submitted abstracts. Notifications of acceptance will be mailed to authors by May, 2000. More information on the CSChE-48 meeting can be found on the conference website at the following address

<http://csche2000.ca/>

5TH NEWSLETTER OF THE EUROPEAN SOCIETY OF RHEOLOGY

SENSIBLE EXPERIMENT IN MATERIALS SCIENCE

April-May 2000

Odessa, Ukraine

The Scientific Council on Computational Materials Science of INTERNATIONAL ACADEMY OF ENGINEERING (Moscow) invites you to take part in the 39th international seminar on modelling and optimization of composites MOC'39 – "SENSIBLE EXPERIMENT IN MATERIALS SCIENCE"

Chairman

Professor Vitaly VOZNESENSKY, D.Sc.

Main Topics

- * Optimization of Materials and Structures
- * Design of Experiment in Rheology (theory and practice)
- * Modern Instruments and Measuring Systems
- * Computational Experiments in Materials Science
- * Experimental Information and Proof of Materials Science Hypotheses

Deadlines

January 31, 2000 - last day for Organizers to receive the extended abstracts

February 10, 2000 - acceptance notification

March 1, 2000 - transfer of collected volume for printing

Working languages are Russian, Ukrainian, and ENGLISH.

Organizing Committee Address

Professor Vitaly Voznesensky

PO Box 76, Main Post Office,

ODESSA, 65000, UKRAINE

vav@paco.net

For information

Dr. Sergey Krovyakov (MOC'38 secretary)

sergey@ses.intes.odessa.ua

Extended abstracts will be published, as received (reduced will be page size). The abstract should occupy FULL 170 X 250 mm field at 1 or 2 or 3 pages. On the upper area of 45 mm height at the 1st page place heading, initials and surnames of authors, city, and country. Use Times New Roman 12-14 and high quality printer. Figures should be without captions.

Please, send 3 paper copies of each extended abstract (in rigid envelope) and its electronic copy, via e-mail as RTF-file attachment or as Word-file on 3.5' disk (along with paper copies). In covering letter, please, give the information about ALL the authors: surname, name, scientific degree, organization and position, ADDRESS, E-MAIL, PHONE, FAX.

Dr. Tatiana Lyashenko

vav@paco.net

5TH NEWSLETTER OF THE EUROPEAN SOCIETY OF RHEOLOGY

TDM 2000 3RD INTERNATIONAL CONFERENCE ON MECHANICS OF TIME DEPENDENT MATERIALS

17-20 September 2000

Erlangen, Germany

Scientific program

The intention of this conference is to discuss time-dependent properties of different materials like ceramics, metals and polymers. The following speakers will present invited keynote lectures:

Prof. Dr. A. Argon (Massachusetts Institute of Technology, Cambridge, USA):

"Physics of the rate mechanism of plastic flow in crystalline and amorphous solids"

Prof. Dr. W. Pechhold (University Ulm, Germany):

"New methods for the measurement of the dynamic-mechanical behaviour of materials"

Prof. Dr. T. Sakuma (University of Tokyo, Japan):

"Grain boundary plasticity in oxide ceramics"

Dr. R.C. Stauber (BMW, Germany):

"Materials for automotive engineering – Current applications and trends"

Minisymposium

Part of the Conference will be a Minisymposium dedicated to Prof. Dr. F.R. Schwarzl on the occasion of his 75th birthday. The following lectures will be presented:

Prof. Dr. G. Hartwig (Forschungszentrum Karlsruhe, Germany):

"Time-dependent fracture processes"

Prof. Dr. L.C.E. Struik (DSM Research, The Netherlands):

"Glass transition and related phenomena in amorphous polymers"

Prof. Dr. F.R. Schwarzl (University Erlangen-Nürnberg, Germany):

"Technical mechanics of amorphous polymers under small stresses"

Papers and posters are welcome in the areas of:

- Experimental methods and techniques
- Comparison of time-dependent properties of different materials
- Dependence of time-dependent properties on molecular structure
- Influence of external parameters like stress, deformation and temperature on the time dependence of mechanical properties of materials
- Influence of the environment on time dependence of materials
- Time-dependence of materials in industrial applications
- Constitutive equations and mathematical modeling of time-dependent material properties

Submission of abstracts

Conference papers will be selected on the basis of a one page abstract, which should be submitted until January 31, 2000 to:

Prof. Dr. H. Münstedt
Department of Materials Science
Institute of Polymer Materials

5TH NEWSLETTER OF THE EUROPEAN SOCIETY OF RHEOLOGY

University of Erlangen-Nürnberg
Martensstraße 7
D – 91058 Erlangen, Germany
Fax: ++49 9131 8528321
TDM2000@www.uni-erlangen.de

Registration

Students DM 350,-
Delegates DM 620,-

The reduced fees given above are valid for registrations before April 30, 2000.
After this date an additional amount of DM 50,- is charged.

Dates to remember

April 30, 2000: Reduced registration fee before April 30, 2000
May 31, 2000: Final manuscript, typed in a prescribed format

Social program

The social program comprises a get-together on Sept. 17 and the conference dinner on Sept. 19 at the Atzelsberg castle near Erlangen. On the afternoon of Sept. 20 an optional excursion to the city of Bamberg, which has been selected as world cultural heritage, is being planned.

Location

The city of Erlangen is a lively University town in Central Frankonia (North Bavaria). It has about 100 000 inhabitants and is a center of important industry. Around Erlangen there are many places worthwhile visiting, for example:

- Rothenburg ob der Tauber
- Würzburg
- Munich (with the “Oktoberfest” at that time)

Accommodation

For accommodation registration cards will be enclosed to the confirmation of registration. Three categories of hotels will be offered.

For more information please contact:

Claus Gabriel or Stefan Rettenberger
Tel: ++49 9131 8528709 Tel: ++49 9131 8527746
Institute of Polymer Materials
Fax: ++49 9131 8528321
TDM2000@www.uni-erlangen.de

International Scientific Committee

Prof Dr H Altenbach (DE)	Dr B von Bernstorff (DE)	Prof Dr AH Cardon (BE)
Prof Dr GW Ehrenstein (DE)	Prof Dr JD Kaplunov (RU)	Prof Dr HH Kausch (CH)
Prof Dr P Greil (DE)	Prof Dr H Mughrabi (DE)	Dr G B McKenna (US)
Prof Dr K Ravi-Chandar (US)		

International Organizing Committee

Prof. Dr. H. Münstedt, Chair (DE)	Prof. Dr. I. Emri, Vice-Chair (SI)
Prof. Dr. W.G. Knauss, Vice-Chair (US)	Prof. Dr. M. Takashi, Vice-Chair (JP)
Prof. Dr. O. Vöhringer (DE)	Dr. J. Kaschta (DE)

5TH NEWSLETTER OF THE EUROPEAN SOCIETY OF RHEOLOGY

EUROPEAN SCHOOL ON COMPUTATIONAL RHEOLOGY

19-23 June 2000

Maastricht, Conference Center Vaeshartel, The Netherlands

In recent years significant progress has been made in the area of Computational Rheology. A number of well-established, robust and efficient computational algorithms have been developed. In combination with sophisticated constitutive models, these algorithms allow the quantitative analysis of two and three-dimensional viscoelastic flow problems. Constitutive models may either appear in closed-form or be based on kinetic and stochastic theory.

The objective of this course is to introduce

- Continuum mechanics based constitutive models
- Kinetic and stochastic theory based constitutive models
- Computational algorithms tailored to these classes of models

The morning sessions will concentrate on constitutive and finite element theory, while during the afternoon sessions computational exercises are offered to obtain experience with various algorithms and constitutive models.

Course schedule

- Review of basic continuum mechanics
- Differential constitutive models
- Kinetic theory for dilute solutions and resulting constitutive models
- Reptation theory yielding integral models
- FEM for convection diffusion equations
- Generalized Newtonian flows
- Mixed FE formulations for viscoelastic flows, including DEVSS-G/SUPG, DEVSS-G/DG, etc.
- Time dependent flows and stability
- Lagrangian FEM
- Deformation fields formulation
- Stochastic simulations
- Brownian configuration fields
- Lagrangian particle methods
- Simulation of Reptation

Course Contributors

Prof. Frank Baaijens	Prof. Ben van den Brule	Prof. Ole Hassager	Dr. Martien Hulsen
Prof. Roland Keunings	Prof. Pino Marrucci	Dr. Gerrit Peters	Prof. Manfred Wagner

Course Fee

Prior to 1 March 2000: 2000 NLG (□910)

After 1 March 2000: 2500 NLG (□1140)

The course fee includes full boarding in Conference Center Vaeshartel, starting Monday June 19 ending Friday June 23.

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5TH NEWSLETTER OF THE EUROPEAN SOCIETY OF RHEOLOGY

SYMPOSIUM MECHANOTRANSDUCTION 2000

17-18 May 2000

ENPC, Champs sur Marne, France

We have the pleasure to invite you to the Symposium MECHANOTRANSDUCTION 2000 on Engineering and Biological Materials and Structures which will take place on May 17-18, 2000, at ENPC, CHAMPS SUR MARNE, FRANCE.

Conference topics include :

- ORGANS AND STRUCTURES - TISSUES AND MATERIALS
 - A - physiology: inspiration for engineer
 - B - the adaptative structures and the functional materials in engineering
- MODELLING AND SIMULATION OF THE PHYSICAL AND CHEMICAL BEHAVIOUR
 - A - engineering: formal support for biology
 - B - active control
- EXPERIMENTAL METHODS IN PHYSICS AND BIOLOGY

More information on the conference MT2000 can be found at: <http://www-rocq.inria.fr/SB/Colloq/MT2000>

Sylvie Wendling (*For the Organizing Committee,*)

Universités Paris 12 - Paris 7, CNRS ESA 7052

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PHYSICS AND MECHANICS OF GRANULAR MATERIAL

5-7 September 2000

ENPC, Champs sur Marne, France

The name of the colloquium is "Physics and Mechanics of Granular Material", with an emphasis on Civil Engineering Applications. Granular flows (dry, cohesive or concentrated suspensions) are one of the area of interest. It will take place in the Ecole Nationale des Ponts et Chaussees (Paris), between the 5 and the 7th September 2000. The official language will be French, but conferences in English will be allowed.

Further information can be found on the following website: <http://www.univ-mlv.fr/colloques-PMMG>

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5TH NEWSLETTER OF THE EUROPEAN SOCIETY OF RHEOLOGY

SYMPOSIUM ON INVERSE PROBLEMS AND EMERGING TECHNIQUES IN MATERIALS CHARACTERIZATION

10-12 April 2000

Lake Vyrnwy Hotel, Mid Wales, UK

The above symposium is being organised by the University of Wales Institute for Non-Newtonian Fluid Mechanics. The meeting will begin with lunch on Monday 10th April and finish at lunchtime on Wednesday 12th April.

The purpose of the meeting is twofold. To discuss inverse problems in rheology and materials characterization, and also to provide a forum for the discussion of new techniques from areas outside rheology which are either already beginning to make an impact on materials characterization or have the potential to do so. To provide a workshop ambience, the meeting will be restricted to about 40 participants.

A sample of the topics relevant to the meeting is:

- The determination of linear viscoelastic functions.
- The determination of molecular weight distributions.
- Capillary viscometry.
- The inverse viscous heating problem in viscometry.
- Acoustic and optical back-scattering.
- NMR spectroscopy.
- Magnetic Resonance Imaging.
- Dielectric spectroscopy
- Atomic force spectroscopy

The following have agreed to speak : R.S.Anderssen (Canberra); W R Bowen (Swansea); R.Challis (Nottingham); I Emri (Ljubljana); Chr Friedrich (Freiburg); J Honerkamp (Freiburg); J Mewis (Leuven); M J W Povey (Leeds); R A Williams (Leeds); H H Winter (Amherst).

The Lake Vyrnwy Hotel is located in one of the most spectacular regions of Wales. It is well known for its levels of comfort and excellent cuisine. The nearest airport is Manchester (England) which is a little over an hour's drive away. The registration fee, which includes the cost of accommodation and all meals, is GBP 340, and is due by 31 January 2000. The cost for an accompanying person sharing a room with a delegate is GBP 100.

If you wish to participate in the symposium, as a speaker or otherwise, please contact:

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GERMAN SOCIETY OF RHEOLOGY (DRG)

A Joint Meeting of the German Society of Rheology (DRG) and the Section Polymerphysics of the German Physical Society (DPG) was held at Leipzig, March 1-3, 1999, organized by F. Kremer, H.M. Laun, R. Schnabel and M.H. Wagner. The Meeting featured on the 1st day plenary and keynote lectures on polymer rheology and polymer physics by S. Hess, TU Berlin, J. Meissner, ETH Zurich, I. Alig, DKI Darmstadt, G. Eder, Johannes-Kepler-Universität Linz, T. Fischer, Universität Leipzig, Ch. Friedrich, Universität Freiburg, R. Vogel, IPF Dresden, and M. Wilhelm, MPI fuer Polymerforschung Mainz. Of special interest were two plenary lectures given by J. Klein, Rehovot, Israel, on "Rheology of Polymer Brushes", and L. Leger, Paris, France, on "Onset of Flow with Slip Boundary Conditions". On day 2 and 3, following plenary lectures by W. Pechhold, Universität Ulm, and J. Springer, TU Berlin, oral and poster contributions from all aspects of rheology were presented, including a symposium on Food Rheology organized by W.-M. Kulicke.

Prof. J. Kubat, Göteborg, received the Honorary Membership of the DRG for his devoted services to European rheology. His connection with the DRG dates back to the 2nd meeting of the DRG (Berlin 1952), when he presented a paper "Über rheologische Relaxationsprozesse". He is only the third recipient of this honour, after L. Prandtl and K. Kirschke.

A first was the presentation of the Young Rheologists Award of the DRG for the best publication in 1997/98, which was jointly given to C. Gabriel, Universität Erlangen, and D. Maier, formerly Universität Freiburg.

The more than 300 participants of the meeting enjoyed an organ and vocal concert in St. Thomas Church of Leipzig, famous from the days when J.S. Bach was Thomas-Cantor there. Historic Auerbachs Keller, where Faust and Mephisto disputed with the students in J.W. Goethe's classic play "Faust", was a particularly suitable place for the conference dinner.

The next meeting of the DRG will celebrate the Golden Jubilee of the German Society of Rheology, and will take place from May 14 to 16, 2001, at Berlin, where the DRG was founded in 1951.

M.H. Wagner



HELLENIC SOCIETY OF RHEOLOGY (HSR)

The membership of HSR has reached 42 including the two honorary members, Professor A. Acrivos and Dr. L. Zapas.

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The HSR co-organized the South European Rheology Conference (with the Italian, Portuguese and Spanish Societies) held in Sangineto, Italy, September 7-11, 1999.

Future scientific events organized by the HSR include:

- The 5th National Polymer Meeting (jointly organized with the Hellenic Polymer Society), tentatively scheduled for September 2000 in Crete.
- The 3rd HSR Meeting and International Symposium, tentatively scheduled by September 2001 in Patras.

Further information can be found in the ESR or HSR web sites:

<http://www.ncl.ac.uk/rheology/esr>

or

<http://luce.iesl.forth.gr/~hsr/HSRwebpage.html>



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GROUPE FRANÇAIS DE RHEOLOGIE (GFR)

The 34th annual general meeting of the French Group of Rheology (GFR) has been held in Paris on October 18-20 1999 (CONSERVATOIRE NATIONAL DES ARTS ET METIERS 292 rue Saint Martin PARIS). Its main scientific subjects were related to the Rheology in life sciences and technologies (Rhéologie des Matériaux du Vivant). The Scientific Committee chaired by P.G. de Gennes included M. Baquet, L. Dubertret, G. Couarraze, B. Launay, J-L. Morancais, C. Oddou, D. Quemada, J-F Stoltz.

Bringing together 168 academic and industrial scientists this meeting included many poster presentations, 47 communications and four plenary sessions devoted to the following topics: Biorheology (fluids and soft tissues), Rheology of biopolymers, Rheology of biocompatible materials, Rheology of powders and Rheology of controlled release systems. The proceedings have been edited as a special 400 pages issue of «Les Cahiers de Rhéologie» (Volume XVI, Numéro3). «Les Cahiers de Rhéologie» is a scientific publication of the GFR, in French language, which is published about 3 times a year and may be made available to non-members.

During the 3 days of this Conference, the participants had also the opportunity to get information of the latest developments of the instrumentation by the majors rheometer companies who had booths just in front of the conference rooms. Some time was also left for special social events like the visit of the Senat Palace or the CNAM museum which houses very interesting pieces which belong to the history of French sciences and techniques.

After the annual general meeting of the GFR, Pr Patrice Flaud who was co-ordinating the organisation committee has been elected new president of the GFR and all participants had a chance to do some practical work on fluid transportation since the traditional Banquet was hold on a boat cruising on the river Seine. The next GFR annual conference is already planned. It will be held in Grenoble 23-15 October 2000.

In year 2000 our 35th Annual General Meeting will be held in Grenoble from 23 to 25 October in concert with the Greek and Italian societies of rheology. Nadia EL KISSI (Laboratoire de Rhéologie) is co-ordinating the organisation.

The topic is «Rhéologie et innovation». More information can be found on the conference website at the following address <http://rheologie.ujf-grenoble.fr>. Additional inquiries can be obtained through gfr2000@ujf-grenoble.fr

The third edition of the «Meeting of Young Rheologists» will take place in La Colle sur Loup, close to the Mediterranean sea, from May 22nd to 24th, 2000. It will be organized by Bruno VERGNES (CEMEF, Ecole des Mines de Paris). For more information contact: vergn@cemef.cma.fr. The deadline for inscription is February 15, 2000.

Jacques Bouton



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Pinho**

SOCIEDADE PORTUGUESA DE REOLOGIA (SPR)

The Portuguese Society of Rheology was formally constituted on December 11, 1997. The Installing Committee of the SPR was constituted by Profs. A.C. Diogo (U.T.Lisboa), President; José Covas (U.Minho), Pilar Gonçalves (U.Porto) and the late Eng. M. Frias (Lisbon). The General Meeting held in Oporto on May 7, 1998, approved the list of founder members (68), the By-Laws, and elected the Boards of the Society.

The General Meeting of May 7, 1998, approved, unanimously, the application of the Portuguese Society of Rheology for membership of the International Committee of Rheology and of the European Society of Rheology. The present size of the Society is 95 associates (December 1999).

The constitution of the Portuguese Society of Rheology was the consequence of a number of years of informal but fruitful cooperation among different R&D groups in Portugal, both in the Universities (Oporto, UTLisbon, Minho), State Laboratories and Industry.

This co-operation was clear by a number of events that took part in the last ten years, a number of which are given here:

- The 1st Joint British-Spanish-Portuguese Rheology Meeting on “**Molecular Structure and Rheology of Polymers (both Synthetical and Biological)**” held in Alcabideche (Portugal), 23-25 November 1989.
- A NATO Advanced Study Institute on “**Rheological Fundamentals of Polymer Processing**”, held in Alvor (Portugal), 26 September- 8 October 1994.
- The One-day Meeting on “**Linear and Non-linear Viscoelastic Behaviour - Gel and Emulsion Rheology**”, Lisboa, 28 May 1997.
- Participation at the National Meetings of the Portuguese Materials Society (every two years since 1983).
- The First Meeting of the Portuguese Society of Rheology, held in Lisbon, February 18, 1999.
- The 2nd ESAFORM Conference on **Material Forming**, held in Guimarães, April 13-17, 1999.
- A NATO Advanced Study Institute on “**Structure Development in Processing for Polymer Property Enhancement**”, held in Caminha, May 17-29, 1999.
- The Portuguese Society of Rheology co-operated with the Italian Society of Rheology, the Spanish Rheology Group and the Hellenic Society of Rheology in the organisation of the **Southern Europe Conference on Rheology**, held in Falerna Lido (Calabria, Italy), September 7-11, 1999.
- The Second Meeting of the Portuguese Society of Rheology (SPR) will take place in Porto, Portugal on the 7th and 8th April 2000.

BULLETIN OF THE EUROPEAN SOCIETY OF RHEOLOGY



The Council Boards of the Portuguese Society of Rheology are constituted:

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Last September around 80 participants came to the South of Italy, in Falerna Lido, a nice place on calabrian coast, to attend to the "Southern Europe Conference on Rheology" organised by the National rheological societies of Greece, Slovenia, Spain, Portugal and Italy which decided to collapse their annual meetings in a unique meeting. The original idea of organizing such a conference was born about one year and half ago, during the "Joint Conference of Italian Austrian and Slovenian rheologists" held in Trieste, May 1998 when the participants thought that that it would have been rather interesting to join researchers from the southern Europe to encourage scientific exchange between them; it was decided that south Italy would have been a good place for this event and, maybe, also this was an attraction for scientists coming from other countries. The idea was realized successfully because there were about eighty participants coming essentially from the five organizing countries, but also from other European countries and U.S.A. Thus, also the European rheological community recognised the validity of this initiative and this event was entitled Eurorheo 99-3.

The University of Calabria and the Department of Chemical engineering and Materials supported the organisation of this event and Prof. Bruno de Cindio, vice president of the Italian Society of Rheology and his co-workers took the organisation of the meeting.

The technical program included 41 oral and 35 poster presentations, on various topics like polymers, food rheology, experimental techniques, etc., divided in four days.

The first day September 8th, at the opening ceremony Prof. Rosario Aiello from the Department of Chemical Engineering-UNICAL, Prof. Angelo Ferro, president of the Pavan S.p.A. (official sponsor of the conference) a world leader of pasta production plant factory, Dr. Enrico Borgarello from EniTecnologie (official sponsor of the conference), the research centre of Eni, the most important Italian petrochemistry company, Prof. Ken Walters president of European Society of Rheology, and Prof. Romano Lapasin president of the Italian Society of Rheology, gave their welcome to the attendants.

The sessions were possibly organised with speakers coming from different countries just to favour the scientific exchange, it was also tried to put together different topics but, as expected, it was quite difficult due to the large number of works on polymers.

The first session was held on Wednesday morning and was focussed on recent advancements in polymer rheology. They were discussed both theoretical matters such as the non-linear viscoelasticity, the difference between

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shear rate and shear stress as independent variable, and experimental results about suspensions of polymeric spheres. In the afternoon the works having a particular industrial interest were presented. It was very interesting to discuss together works dealing with different topics as polymers, foods, cosmetics and lubricants. Even if the materials appear to be very different, the rheological approach is very similar, therefore the researchers could have a very fruitful exchange of information. We must admit that it was really a very long and tiring day but not boring.

At the opening of the second day we had the pleasant participation of Prof. G. Latorre, just elected as new rector of University of Calabria, who made a welcome and presented this University that is very proud to have promoted the conference. In the morning session it was possible to discuss works on rheological properties of foods like gels, egg-yolk, dough for pizza and fruit, of emulsions and also of polymers with particular emphasis on processing aspects.

The afternoon was dedicated to visit the Calabria National Park on the mountains where the participants were "obliged" to make a walk of about 2 Km at 1400 m over sea level. Then we moved to Camigliatello Silano, a tourist centre on Sila mountains, where participants had our "casual" gala dinner based on special and typical calabrian foods. It was difficult to start a new session on Friday morning but we succeeded. The first part was dedicated to works on computation but also on foods and ceramic suspensions, linked to specific process such as extrusion, membrane filtration, flow in ducts. The second part was mainly dedicated to polymers with a particular focus on theoretical and experimental aspects such as flow visualisation, molecular weight distribution, extensional flow and molecular structure. Apart from that we had also a new approach for food and a singular presentation about rheology of wood used for musical instruments. Friday afternoon was dedicated entirely to the poster session. The works dealt with several rheological problems from polymers to ceramics, foods, lubricants, emulsions, surfactants, paintings etc. We had really a wide overview of rheology. During the last day tired people could effort the last two sessions concerning with polymers and suspensions. Some experimental aspects were discussed in detail such as the steady annular extrusion, the use of eccentric cylinders, the shape of drops, the filler dependence in gels, the rheo-optics of polymers, but also the effect of the deformation field on the rheological properties of some modified polymers and suspensions based on polysaccharides were presented. They were four intense days but at the closure the presidents of the five organizing societies expressed their sincere gratefulness to the local committee for the

BULLETIN OF THE EUROPEAN SOCIETY OF RHEOLOGY

“extraordinary” work performed during the conference organisation.

Some works presented during the conference will be reported on a special issue prepared by Rheologica Acta.

This experience was rather positive because the size seemed right to allow enough long talk and also discussion. This has convinced to repeat this type of event every four years in different countries, therefore, if this will be realised, the Calabrian local committee is very proud to have been the founder of the “Southern Europe Conference” series.

Further information can be available by contacting directly the local committee by email: bruno.decindio@unical.it, rheo.lab@unical.it.

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CONFERENCE REPORTS

THE 6TH EUROPEAN SCHOOL OF RHEOLOGY

6-10 September 1999

Katholieke Universiteit Leuven, Belgium

The 6th European School of Rheology was organized under the auspices of the European Society of Rheology and the Belgian Group of Rheology from September 6-10, 1999 at the Katholieke Universiteit Leuven, Belgium. The 63 participants fully reflected the diverse character of the ESR with participants drawn from industry and academia, from as far as Poland and Spain.

The classes were held in the historic Arenberg Castle. The lectures covered the range from theoretical (Molecular Theories of Polymer Dynamics by Prof. G. Marrucci, Università di Napoli) to the nitty-gritty of practical applications. Other lectures included Shear Rheometry, Prof. P. Moldenaers, and Rheology of Suspensions, Prof. J. Mewis, (both from K.U. Leuven), as well as Extensional Rheology (Prof. G.G. Fuller, Stanford University). Recent developments in computational rheology were described by Prof. R. Keunings, Université Catholique de Louvain. Prof. G. G. Fuller also covered the relatively recent topic of Rheo-Optics, a presentation that aptly used an "advanced optical system" to project slides and movies off his laptop computer. Prof. C. Macosko, University of Minnesota, relieved the formidable subject of Non-linear Viscoelasticity with jokes about rheologists and chemists whereas Prof. M. Wagner, T.U. Berlin, covered Polymer Processing.

In addition to classroom lectures, the School of Rheology included several laboratory sessions in which various rheometric instruments and techniques were demonstrated, including rotational, extensional, capillary rheometry, rheo-optics, and computational rheology. These sessions were conducted in the Department of Chemical Engineering by members of the Laboratory of Applied Rheology and Polymer Processing at the K.U. Leuven. In addition to these demonstrations, several manufacturers of rheometric equipment displayed their latest instruments and software for rheological testing. Participants were also encouraged to bring along their own samples for preliminary testing; this was done at no cost by the laboratory staff at the end of the course.

Academic activities were supplemented with several social events. Participants got a chance to get introduced to each other on the reception on the first day, and to socialize and compare notes daily over lunch. Many participants also attended a banquet at the Faculty Club of the University. A guided tour of the city of Leuven, including the Groot Begijnhof and the beautiful City Hall was also organized one evening. This tour ended at a pub where participants got a chance to try some of Belgium's many beers; everyone agreed that these fluids

Feedback from the participants was generally very positive; many remarked that the pace of the course was very demanding, though at least some participants with prior knowledge of the discipline found some presentations somewhat detailed. This is of course a common problem when lectures are organized for students with very diverse backgrounds. Almost everyone agreed that the lab sessions were extremely useful.

Finally, the organizers would like to gratefully acknowledge the efforts of all lecturers and the secretary of the course (Dr. J. Vermant) as well as the participants and laboratory staff in making this course a success.

Prof P Moldenaers
K.U. Leuven

BSR MEMBERSHIP NEWS

NEW MEMBERS

UNITED KINGDOM	
Mr Stefano Carlini Johnson Matthey (Colour and Coating) Uttoxeter Rd Stoke on Trent fetsa DGIO	Dr Anwarul Haque Cranfield University at Silsoe Silsoe Bedfordshire MK45 4DT fetsa DFGHL a.haque@cranfield.ac.uk
Ms Victoria Mason Henkel Surface Technologies Featherstone Rd Wolverton Mill Milton Keynes MK12 5 TH feta AFGH victoria_mason@henkel.co.uk	Mr Richard Blackwell Dept of Applied Mathematics University of Leeds Leeds LS2 9JT ftsa D Richard.Blackwell@physics.org
Mr Sopark Sonwai Dept of Chemical Engineering Pembroke St. Cambridge CB2 3RA petsa L ss325@cam.ac.uk	Mr Christopher Poole Bohlin Instruments The Corinium Centre Cirencester GL7 1YJ fea DFGJKLM chrisp@bohlin.co.uk
Mr Martin Aardal Bohlin Instruments The Corinium Centre Cirencester GL7 1YJ feta CFGJKL ma@bohlin.co.uk	Dr Richard Hall Bohlin Instruments The Corinium Centre Cirencester GL7 1YJ feta A-0 rhall@bohlin.co.uk
Mr Matthew Barrow Dept of Chemical Engineering University of Wales, Swansea Singleton Park Swansea SA2 8PP fesa DFJLM cebarrow@swansea.ac.uk	Mr Stephen Brown Dept of Chemical Engineering University of Wales, Swansea Singleton Park Swansea SA2 8PP fetsa DFGHJLM cebrowns@swansea.ac.uk
Mr Sejal Ravji Dept of Chemical Engineering University of Wales, Swansea Singleton Park Swansea SA2 8PP fetsa DFGJLM ceravjis@swansea.ac.uk	Mr Richard Jones Dept of Chemical Engineering University of Wales, Swansea Singleton Park Swansea SA2 8PP fetsa FGJL cejonesr@swansea.ac.uk
Mr Karl Hawkins Dept of Chemical Engineering University of Wales, Swansea Singleton Park Swansea SA2 8PP fetsa DGJL cehawkin@swansea.ac.uk	Dr Ala Al-Hussany Dept of Chemical Engineering University of Wales, Swansea Singleton Park Swansea SA2 8PP fetsa DFGM cehussan@swansea.ac.uk

UNITED KINGDOM	
Mr Leslie Rose BP Chemicals PO Box 21 Bo'Ness Road Grangemouth FK3 9XH <i>fetsa CD</i> <i>rosel@bp.com</i>	Mr Peter Mawer SOMS Centre School of Chemistry University of Leeds LS2 9JT <i>fesa MO</i> <i>peterm@chem.leeds.ac.uk</i>
OVERSEAS	
Ir. Paul Vercrujisse MTI Holland BV 2960 AA Kinderdijk Holland <i>fetsa GH</i> <i>P.M.Vercrujisse@MTIHolland.com</i>	Dr Vladimír Pavlínek Fakulta Technologická Ve Zlíně nárn.T.G. Masaryka 275 762 72 Zlín, Czech Republic <i>pavlinek@zlin.vutbr.cz</i> <i>fesa BCDG</i>
Ms Ana Cristina Ferreira de Oliveira Rosado Freire Laboratório Nacional Engenharia Civil Departamento de Vias de Comunicação / Núcleo de Pavimentos Rodoviários Av. Brasil 101 1700-066 Lisboa Codex, Portugal <i>acfreire@lnec.pt</i> <i>fetsa KO</i>	Dr A K Lele Chemical Engineering Division National Chemical Laboratory Pune 411008 India <i>lele@che.ncl.res.in</i> <i>fetsa D</i>

RESIGNATIONS

The following members have resigned.

United Kingdom

Professor M Braden, Professor John M Smith, Mrs SD Salt, Dr David Kirkwood, Professor DJ Hourston, Mr RA Stephenson, Dr AA Collyer

Overseas

Mr T Holz, Germany; Mr M Barker, Belgium; Dr M Ak, Turkey; Dr Alfred Nissan, USA; Mr KW Raybuck, USA

LOST MEMBERS

Council is anxiously attempting to trace the following members, whose address details are no longer valid. If you can supply information, please contact the Membership Secretary (contact details inside front cover):

Mr AC Bickley	Dr U Cartalos	Mr M Cassidy
Mrs G Clissold	Mr GM Corfield	Mr S J Crook
Prof Dr PK Currie	Mr BS Evans	Mr RE Evans
Dr RJ Field	Mr M Finch	Dr JA Goshawk
Mr A Green	Mr PAP Hastilow	Ms K Hatley
Dr AM Keeley	Professor S Kim	Mr BU Komanschek
Mr DC Kothari	Mr B J Launchbury	Dr H Luyten
Miss R K Mathanj	Mr P J Moran	Miss N Mulji
Mrs R A Needham	Ms NG Ozcan-Taskin	Dr L-I Palade
Mr S J Pitman	Ms F Power	Ms EM Rowlands
Dr M P Ryan	Mr M Schmidt	Mr A Siddiqui
Mr SK Sinha	Mr CA Street	Mr C Teran
Mr DM Turner	Miss N Turner	Mlle P Vlachou
Mr W-K Wee	Dr AB Wheeler	Mr IP Whelan

OTHER MEMBERSHIP NEWS

FOUNDING / EARLY MEMBERS OF THE BSR

The BSR is sixty years old this year. The editor would like to take this opportunity to invite any of our founding or early members, to submit a few thoughts and observations on the early days of the "Club" and its evolution into the present Society.

RECRUITMENT OPPORTUNITIES

Job Seekers are advised to check the "eurorheo" archives at <http://www.mailbase.ac.uk/lists/eurorheo/archive.html> for other employment opportunities.

For example:

POST-DOCTORAL FELLOWSHIP IN POLYMER PHYSICS

The Polymer Rheology and Mechanics Laboratory in the Department of Chemical Engineering at Texas Tech University has a position available for a rheologist or polymer physicist to participate in an ongoing research program related to the nonlinear thermal and mechanical properties of polymeric solids. The position is for one year with renewal for a second year depending on performance.

Interested candidates should have a familiarity with polymer physics, rheology or mechanics and a willingness to build new instrumentation relevant to both mechanical and calorimetric measurements.

Salary is negotiable and is in addition to health care benefits provided for the individual.

The position is open any time after April 1, 2000.

Texas Tech University is currently expanding its activities in the polymer and rheology areas and the candidate will be joining a dynamic and growing group under the tutelage of G.B. McKenna.

Interested candidates should send a CV and letter

Gregory B. McKenna
Professor and John R. Bradford Chair in Engineering
Department of Chemical Engineering
Texas Tech University
PO Box 43121
Lubbock, TX 79409
Phone: 806-742-4136
Fax: 806-742-3552
e-mail: greg.mckenna@coe.ttu.edu
WWW: <http://www.che.ttu.edu/Faculty/McKenna/McKenna.htm>

(21 Feb 2000)

INDUSTRY NEWS

IOS Press is pleased to be the publisher of the journals "Biorheology, The Official Journal of the International Society of Biorheology" and "Clinical Hemorheology and Microcirculation".

To increase the familiarity of the journals "Biorheology" and "Clinical Hemorheology and Microcirculation" with the members of your association, we at IOS Press would like to offer a special subscription rate for members of the ESR.

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Marjolein Bijsterveld
Promotion Assistant
Email: p.assistant@iospress.nl

Biorheology

The Official Journal of the International Society of Biorheology

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Aims and Scope

Biorheology comprises the study of the response to deformation and flow of biological systems, or of materials directly derived from living organisms. It is the purpose of biorheological investigation to relate these responses to the molecular, cellular and structural composition of the biological system and to understand why this particular set of mechanical response characteristics have come to be evolved and selected in any specific case. *Biorheology* has as its prime objective to understand the link between the biochemical and biophysical structure of the biological system and its supermolecular organization, its mechanical response

characteristics and its function in the context of the physiological requirements and constraints under which it is obliged to operate.

Regular subscription price for 2000:

NLG 1366/US\$ 683 (including postage and handling)

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Clinical Hemorheology and Microcirculation
Blood Flow and Vessels

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Volume 22-23; 8 issues

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Aims and Scope

Clinical Hemorheology and Microcirculation, a peer-reviewed international scientific journal, serves as an aid to understanding the flow properties of blood and the relationship to normal and abnormal physiology. The rapidly expanding science of hemorheology concerns blood, its components and the blood vessels with which blood interacts. It includes perihemorheology, i.e., the rheology of fluid and structures in the perivascular and interstitial spaces as well as the lymphatic system. The clinical aspects include pathogenesis, symptomatology and diagnostic methods, and the fields of prophylaxis and therapy in all branches of medicine and surgery, pharmacology and drug research. The endeavour of the Editors-in-Chief and Publishers of *Clinical Hemorheology and Microcirculation* is to bring together contributions from those working in various fields related to blood flow all over the world. The Editors of *Clinical Hemorheology and Microcirculation* are from those countries in Europe, Asia, Australia and America where appreciable work in clinical hemorheology and microcirculation is being carried out. Each Editor takes responsibility to decide on the acceptance of a manuscript. He is required to have the manuscript appraised by two referees and may be one of them himself. The Executive Editorial Office, to which the manuscripts have been submitted, is responsible for rapid handling of the reviewing process. *Clinical Hemorheology and Microcirculation* accepts original papers, brief communications, mini-reports and letters to the Editors-in-Chief. Review articles, providing general views and new insights into related subjects, are regularly invited by the Editors-in-Chief. Proceedings of international and national conferences on clinical hemorheology (in original form or as abstracts) complete the range of editorial features. The following professionals and institutions will benefit most from subscribing to *Clinical*

Hemorheology and Microcirculation: medical practitioners in all fields including hematology, cardiology, geriatrics, angiology, surgery, obstetrics and gynecology, ophthalmology, otology, and neurology. Pharmacologists, clinical laboratories, blood transfusion centres, manufacturing firms producing diagnostic instruments, and the pharmaceutical industry will also benefit. Important new topics will increasingly claim more pages of *Clinical Hemorheology and Microcirculation*: the role of hemorheological and microcirculatory disturbances for epidemiology and prognosis, in particular regarding cardiovascular disorders, as well as its significance in the field of geriatrics. Authors and readers are invited to contact the Editors for specific information or to make suggestions.

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CONFERENCES

You are also advised to visit the BSR home pages where an extensive list of conferences is maintained by Chris Petrie:

<http://www.ncl.ac.uk/rheology/conferences/index.html>

2000	
10-13 Apr Cambridge GB	11TH INTERNATIONAL CONFERENCE ON DEFORMATION, YIELD AND FRACTURE OF POLYMERS Eleanor Tipton, Conferences and Events (C008), IOM Communications Ltd, 1 Carlton House Terrace, London SW1Y 5DB T: +44 (0)207 451 7386 F: +44 (0)207 839 2289 E: Eleanor.Tipton@materials.org.uk Info: www.materials.org.uk
Apr-May Odessa UA	SENSIBLE EXPERIMENT IN MATERIALS SCIENCE Chairman: Prof V Voznesensky DSc, PO Box 76, Main Post Office, Odessa, 65000, Ukraine E: vav@paco.net
7-12 May Orlando, FL US	SPE-ANNUAL TECHNICAL CONFERENCE (ANTEC 2000) SPE Conference Department T: +1 203 775 0471 F: +1 203 775 8490 Info: http://www.4spe.org/
9 May London GB	POLYMERS IN COLLOIDAL SYSTEMS SCI Conference Office, 14/15 Belgrave Square, London, SW1X 8PS T: +44 (0)171 598 1563 E: deborahn@chemind.demon.co.uk
22-26 May Minsk BY	4TH MINSK INTERNATIONAL HEAT AND MASS TRANSFER FORUM E: igur@hmti.ac.by
11-13 Jun Bath GB	SPECIALITY CHEMICALS IN INDUSTRIAL MINERAL PROCESSING Dr D Greenhill, ECC International Ltd, Par Moor Rd, St Austell, Cornwall, UK

2000	
	T: +44 (0)1726 818139 F: +44 (0)1726 818031 E: dave.greenhill@eccci.co.uk
21-26 Aug Cambridge GB	RHEOLOGY 2000 - XIIITH INTERNATIONAL CONGRESS ON RHEOLOGY Organised by the BSR with the assistance of the European Society of Rheology. Chairman of the Executive Committee: Prof K Walters FRS, University of Wales, Dept of Mathematics, Penglais, Aberystwyth, Ceredigion, SY23 3BZ, Wales, UK T: +44 (0)1970 622750 F: +44 (0)1970 622777 Info: http://abbey4.swan.ac.uk/rheology2000/
13-15 Sep Newcastle GB	FRC 2000 - COMPOSITES FOR THE MILLENIUM: EIGHTH INTERNATIONAL CONFERENCE ON FIBRE REINFORCED COMPOSITES Louise Blackburn, Conference Organiser, Conference Design Consultants T: +44 (0)191 284 7590 F: +44 (0)191 285 6993 Info: www.ncl.ac.uk/~nccme
17-20 Sep Erlangen DE	TDM 2000 – 3RD INTERNATIONAL CONFERENCE ON MECHANICS OF TIME DEPENDENT MATERIALS Claus Gabriel / Stefan Rettenberger, Institute of Polymer Materials, University of Erlangen-Nürnberg, Martensstraße 7, D-91058 Erlangen, Germany T: +49 9131 852 8709 / 7746 F: +49 9131 852 8321 E: TDM2000@www.uni-erlangen.de
18-19 Sep Durham GB	THE RHEOLOGICAL ASPECTS OF SURFACTANT BASED SYSTEMS (INCORPORATING BSR AGM) Dr R Ettelaie, Colloid, Interface & Rheology Group, ICI Wilton Centre, PO Box 90, Wilton, Middlesbrough, Cleveland, TS90 8JE T: +44 (0)1642 437882 F: +44 (0)1642 437344 E: rammille_ettelaie@ici.com
15-18 Oct Montreal CA	50TH CANADIAN CHEMICAL ENGINEERING CONFERENCE (SYMPOSIUM ON RHEOLOGY) Prof A Ait-Kadi, Dept de genie chimique, Universite Laval – Pav. Poulquet, Ste-Foy, Quebec, Canada, G1K 7P4 E: aitkadi@gch.ulaval.ca J Bouton, RHEO SA, 99 route de Versailles, 91160 Champlain, France E: bouton@rheo.fr Info: http://csche2000.ca
11-14 Sep Sofia BG	9TH INTERNATIONAL CONFERENCE ON MECHANICS AND TECHNOLOGY OF COMPOSITE MATERIALS Central Laboratory of PhysicoChemical Mechanics - BAS, Acad. G. Bonchev Str, Block I, 1113 Sofia, Bulgaria F: +3592 70 34 33 E: clphchm@bgcict.acad.bg
2001	
14-15 Feb Hilton Head, SC US	72ND ANNUAL MEETING OF THE SOCIETY OF RHEOLOGY Details will be added when available
14-16 May Berlin	GOLDEN JUBILEE MEETING OF THE DEUTSCHEN RHEOLOGISCHEN GESELLSCHAFT

DE	E: drq@bam.de
23-27 Sep Melbourne AU	6TH WORLD CONGRESS OF CHEMICAL ENGINEERING Meeting Planners, 108 Church Street, Hawthorn, Victoria 3122, Australia T: +61 (0)3 9819 3700 F: +61 (0)3 9819 5978 E: chemeng@meetingplanners.co.au Info: http://www.meetingplanners.com.au/chemeng
21-25 Oct Bethesda, ML US	73RD ANNUAL MEETING OF THE SOCIETY OF RHEOLOGY Details will be added when available.
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COURSES

2000	
3-7 Apr Bristol GB	THE 2000 SPRING SCHOOL IN COLLOID SCIENCE Bristol Colloid Centre, School of Chemistry, University of Bristol, Cantocks Close, Bristol, BS8 1TS T: +44 (0)117 929 8388 F: +44 (0)117 929 3121
10-11 Apr Malmö SE	DISPERSION OF POWDERS IN LIQUIDS AND STABILIZATION OF SUSPENSIONS Calmia AB, Box 2161, SE-220 02 LUND, Sweden T: +46 46 211 00 20 F: +46 46 211 00 20 E: calmia@swipnet.se
12-13 Apr Malmö SE	GELS, GELLING, AND THICKENERS Calmia AB, Box 2161, SE-220 02 LUND, Sweden T: +46 46 211 00 20 F: +46 46 211 00 20 E: calmia@swipnet.se
30 May – 2 Jun Loch Lomond UK	THEORETICAL, EXPERIMENTAL AND INDUSTRIAL ASPECTS OF RHEOLOGY Dr N E Hudson, Dept of Pure & Applied Chemistry, University of Strathclyde, 295 Cathedral St, Glasgow G1 1XL, UK T: +44 141 548 2162 F: +44 141 548 4822 E: n.e.hudson@strath.ac.uk
19-23 Jun Maastricht NL	EUROPEAN SCHOOL ON COMPUTATIONAL RHEOLOGY Mrs. Marleen Rieken, Eindhoven University of Technology, Department of Mechanical Engineering, Bld. WHOOG 0.126, P.O. Box 513, 5600 MB Eindhoven, The Netherlands T: +31 40 247 2851 F: +31 40244 7355 E: marleen@wfw.wtb.tue.nl
T: Telephone; F: Facsimile; E: Email; Info: WWW URL	

ONES THAT GOT AWAY...

2000	
12-16 Mar Zurich	2ND INTERNATIONAL SYMPOSIUM ON FOOD RHEOLOGY AND STRUCTURE

CH	Institute of Food Science, Laboratory of Food Engineering, LFO E19, ETH Zurich, 8092 Zurich, Switzerland F: +46 1 632 11 55 E: secretary@isfrs.ethz.ch
21-23 Mar Sydney AU	THE MILLENIUM SCIENCE 2000 (INCLUDING A HALF-DAY SESSION ON RHEOLOGY) Dr Janet Paterson, Dept of Food Science & Technology, University of NSW, Sydney, NSW 2052, Australia T: +61 (0)2 9385 5355 F: +61 (0)2 9385 5931 E: j.paterson@unsw.edu.au
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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 - publications, conferences and access to 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.