

AUGUST 4 – 6, 2004
REYKJAVIK, ICELAND

After a seven year pause the NRS returned to the land of fire and ice to host the annual rheology conference. The special topic this year was Suspensions, Emulsions and Fresh Concrete, but as with all years sessions on other aspects of rheology were present, including instrumentation, food rheology, general and theoretical rheology and industrial applications. There was also a significant poster session.

For the early birds who arrived for the course, they were treated to an entertaining afternoon where rheology was broken down to its simplest forms and was applied to various processes by the expert panel of speakers. Firstly, Professor Mats Stading of SIK in Gothenburg was handed the task of introducing the delegates to the niches, facets and esoterics of what rheology is all about, and he led us through what can be the rheological jungle in such skilled fashion that quite possibly our grandmothers would have understood the lecture. The pace was picked up somewhat by Professor Ken Walters of University of Wales, Aberystwyth who took us through a scene setting tour on the backgrounds to successful rheometry. He introduced us to the nature of rheometry and led us into the debates of Cross versus Carreau, establishing that if one is looking for a zero shear asymptote then one has to use Carreau as Cross will not give this. Hav-

ing laid the shear viscosity to rest, we progressed to extensional viscosity and here we were enlightened that, contrary to popular belief, the Trouton ratio does not level off at a value of three at low strains. Dr. Peter Fischer of ETH in Zurich then took up the mantle and took us into the world of linear viscoelasticity, covering relaxation times amongst other things. The control of a system to avoid sedimentation is a common one to the rheology worlds and it was proposed that control of this could be done by increasing the 'memory' of the system, i.e. make the relaxation time shorter. Finally Professor Karsten Qvist of Danisco A/S, Copenhagen presented some aspects on the rheology of dairy based systems by means of two case studies, dealing with soft systems referring to yoghurts, stirred and drinking and moved onto harder systems pertaining to feta cheeses. The course showed us that rheology is many things to many people, an active area of research to a tool used to get answers to material questions.

The course delegates were now given a chance to catch their breath and ready themselves for the opening reception that was to be held in Reykjavik City Hall. Here, between the canapés and wine the delegates were able to network with each other under informal circumstances. The mayor of Reykjavik, Mr. Árnason then formally welcomed the delegates to Iceland and wished them a successful conference. The networking then continued for some time more before the delegates were gently eased out into the lively and buzzing nightlife of Reykjavik.

Figure 1 (left):
The Course Speakers
together with conference
chairman. Dr. Olafur
Wallevik (Conference
chairman), Prof. Mats
Stading, Prof. Ken Walters,
Dr. Peter Fischer,
Prof. Karsten Qvist
(From left to right).

Figure 2 (right): Invited
Speakers: Dr. Peter Fischer,
Prof. Ken Walters,
Prof. Phil Banfill,
Dr. Jón Wallevik
(From left to right).





Figure 3: And for something to drink ... Yes, it's all whisky!

The main conference, opened by the Chairman of the organising committee, Dr. Ólafur Wallevik, got underway with the first of four plenary lectures. The first speaker was Professor Ken Walters who spoke eloquently and fluently on “Some provocative differences between planar and axisymmetric flows in the case of SOME elastic liquids”. We were treated to some fascinating theory and vivid pictures of various fluids flowing through several contraction models. Professor Phil Banfill, of Heriot Watt University in Scotland was next up with a talk entitled, “The effect of mixing on the rheology of cement-based materials containing high performance superplasticisers”. Here, we were exposed to the role of these superplasticisers in the cement-based concrete, which can reduce the amount of water required by up to 30%, and the paper offered results on the influence of both low and high shear mixing on these products. Dr. Peter Fischer, from ETH, Zurich, continued after the break with a presentation entitled, “Controlled structuring of dispersed food systems”. The subject matter addressed was to continuously produce

tailor-made droplets of specific size and shape such that control over the dispersed system may be gained. The system, an emulsion for example, could then go on to become gelled leading to research of drop formation, deformation and gelling kinetics in processes governed by shear and extensional forces. Dr. Jón Wallevik, or IBRI, Reykjavik, gave the final plenary lecture with a talk titled, “Thixotropic behaviour of cement pastes”. The talk presented the delegates with a new equation to simulate the thixotropic behaviour of cement paste and was based around the existing Hattori Izumi theory.

The conference now broke up into parallel sessions where food rheology and cement based suspensions ran together. General and theoretical rheology shared the stage with Drilling fluids and cement grouts. The second day of the conference was split into a cement-based workshop and normal sessions on Instrumentation and Industrial applications of rheology. Instead of picking out individual presentations for comment, the overall trend of the conference was that the healthy mix of delegates from many individual disciplines led to active discussions either during sessions or in the breaks between. I stated to the delegates at the conference banquet that we all essentially face the same problems, sedimentation, floatation, sagging, particle control etc, and the only real difference is the end use of our particular material. The material I work with is spread onto toast, as opposed to the material Professor Banfill works with, which builds bridges! But we are linked in our desire to control our own material that is behaving in essentially the same fashion, albeit at radically different strains and stresses – I hope!

The conference banquet this year was held in true Viking style. We were treated to the Icelandic delicacy that politely can be described as fermented sharks flesh, the more philistine among us may have preferred to describe it as rotten! Nonetheless, a glass of schnapps afterwards cures all. No Carl Klasson award was made by the Society this year and the award for the Young Rheologist was awarded in absentia to Anders Bach of Coloplast A/S Denmark. However, entertainment was not in short supply selected delegates were invited to become a Viking by means of various tests of strength under the supervision of a real strongman. Two of the party

Conference Report I



Figure 4 (left):
Prof. Phil Banfill presents
Hamid Sariff with the NRS
award for best presentation.

Figure 5 (right):
Niall Young presents the
NRS Young Rheologists
award to Anders Bach.



were finally inducted as Vikings and received the favour of the Viking Gods. Being one of them, I was mightily relieved since the price of failure was one's head!

As last year the Society made an award to the best presentation as judged by the Invited Speakers. This year the honour and distinction went to Hamid Sarraf for his presentation, "A novel prediction method for preparation and microstructure developing of zirconia ceramics by colloidal processing". The award was presented to Hamid by Professor Banfill during the Whisky Tasting session.

To finish the conference on a proper fashion, those delegates brave enough were exposed to some 200 bottles of whisky and were given 2 hours in which to 'go viking'. There were some ground rules, you don't pour yourself and you must have a glass of water between drams. This had the beneficial effect of preserving Olafur's private collection from the marauding hordes and the delegates heads the next day!

Finally, before outlining where we will be next year, the pleasant informal nature of the conference was shown at breakfast on the Sunday morning. The last ones to leave were sharing an early, 04:30 am breakfast when talk ventured inexplicably to the apparent absence of rabbits

on Iceland. Quick as a flash, the reply came back that Iceland's rheology is not suited to rabbits, as they cannot burrow through basalt! We should have learned that much from the conference since the special topic was cement-based materials. I'll spare the blushes of those involved, but you'll know who you are as your read this, as will the rest of the table.

Next year, the NRS will take the annual conference to Finland to the University of Tampere, where the special topic will be the Rheology of Processing. The dates for this meeting have been fixed as 1st to 3rd June 2005. I hope to see as many of you as possible there, and of course further information will appear in due course on our web site www.nordicrheologysociety.org

Lastly, the Society elected a new Board to run its affairs for the coming four year period and details of the new office bearers can also be located on the website.

Niall W. G. Young
NRS President
Danisco A/S
Edwin Rahrs Vej 38
8220 Brabrand
Denmark
niall.young@danisco.com

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